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COMP90082-2024-lp-koala

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Product Documentation

 Product Guide	 Prototypes	 User stories
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Product

[Project Introduction](#)

[Production Demonstration Guide](#)

Project Introduction

Project Overview

The DLASSP project is conceived as a comprehensive and customisable LMS, tailored specifically for a unique user system consisting of Admins, Researchers, and Raters. The platform is intended to provide a versatile digital environment where the users can manage, participate in, and evaluate a variety of educational and assessment-oriented projects. Each user group is granted access privileges aligned with their operational scope and responsibilities to facilitate efficient project management, content creation, user interaction, and data analysis.

Current Background

The recent increase in demand for digital platforms that support detailed project management and evaluation, particularly in education, underscores the need for an advanced LMS. Traditional LMSs often lack the specialised tools required to meet the intricate requirements of researchers and raters. Consequently, there exists a significant market gap for a more sophisticated product that can effectively address these needs. As educational institutions and organisations increasingly rely on digital platforms for teaching, learning, and assessment, the necessity for an enhanced LMS that offers comprehensive project management and evaluation capabilities becomes even more apparent.

Thus, the necessity for DLASSP arises from these critical gaps. As educational institutions and organisations increasingly rely on digital platforms for a broader range of functions—including in-depth project management, personalised learning experiences, and comprehensive evaluation mechanisms—the need for an enhanced LMS that integrates these advanced features becomes paramount. DLASSP is envisioned as a solution that not only supports the traditional roles of an LMS but also equips Admins, Researchers, and Raters with sophisticated tools specifically designed to address their unique challenges in managing, participating in, and evaluating educational and assessment-oriented projects. Through DLASSP, users will gain the ability to manage and evaluate educational content and projects with greater precision and flexibility, leading to improved educational outcomes and more effective research and assessment methodologies.

Project Goals

- **Develop a Customisable and Secure LMS:** Create a platform that can be tailored to the roles of Admin, Researchers, and Raters, ensuring secure and correct access to content and features according to user roles.
- **Enable Efficient Project and User Management:** Implement comprehensive administrative functions for user management.
- **Facilitate Specialised Content Creation and Management:** Equip researchers with advanced tools for creating, editing, and managing educational content.
- **Enhance Rater Interaction and Engagement:** Allow raters to engage with the content through interactive activities and provide meaningful feedback.
- **Ensure Data Security and Integrity:** Prioritise the protection of sensitive information.
- **Establish a Collaborative Environment:** Build forums where users can share insights, discuss evaluations, and contribute to the collective knowledge base.

Out Of Scope

- Enable admin/researchers to communicate with selected raters only in the forums
- Enable researchers to lock raters' ratings for a while

Trello Link

[COMP90082](#)

Github Link

 <https://github.com/COMP90082-2024-SM1/LP-Koala> Connect your Github account

Our Team

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Name	Role	Email
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Lin Li	Supervisor	lin.li10@unimelb.edu.au

Production Demonstration Guide

Usage

Link:

Please click the following link to access our product to check our progress:

- [LP-Koala project](#)

Test accounts:

There are three accounts for testing currently:

1. username: admin
password: password
2. username: researcher
password: password
3. username: rater1
password: password

Side notes:

Feel free to create user accounts using the admin account. For security reasons, we design the user creation only available via admin's portal, instead of users creating an account and waiting for admin's approval.

Functionalities are implemented according to project requirements. There is no need for instruction as our UI design is user-friendly and intuitive.

Since this is our temporary version of our project, some functionalities are not yet implemented. Some functionalities are subject to change for completeness and robustness. Further updates will be available in the later weeks.

Configuration

Login token expiry time:

Currently, once a user logs in, the login token will be expired in 5 minutes and the user will have to log in again. We set this time to demonstrate the JWT expiry functionality. This is subject to change later according to client's needs.

Website domain name:

Since we deploy our project via Heroku for demonstration purposes for now, the domain name is <https://lp-koala-frontend-1e10ff20d284.herokuapp.com/>. This is subject to change later in the subject.

Deployment method

Our project is currently deployed using Heroku, as discussed in the plan for sprint 2. This project will be further deployed in the server provided by client when the product is ready for production.

Requirements

Persona

Prototype

Motivational Model

User Stories

Product Backlog

Persona

Persona: Dr.Elena Torres

Demographics

Age: 38
Education: PhD in Educational Psychology
Occupation: Senior Researcher at an Educational Assessment Organisation



"I need an LMS that understands the complexity of educational assessment—it should be secure, adaptable, and insightful."

Pain Points & Frustrations

- Current LMS platforms do not cater to the nuanced needs of her assessment projects.
- Collaboration with raters is often cumbersome due to inflexible platforms.
- Concerns over the security of confidential assessment data on generic LMS solutions.
- Difficulty in analysing data from raters in a meaningful and efficient way.

Role: Researcher

Behaviors & Habits

- Elena often juggles multiple projects, requiring her to be organised and efficient.
- She prefers platforms which are intuitive and require minimal training for new users.
- She values systems that offer detailed analytics and reporting tools.
- Elena prioritises data security and prefers systems with strong access control measures.

Needs & Goals

- To streamline the development and management of assessment projects.
- To collaborate efficiently with a team of raters and fellow researchers.
- To securely handle sensitive assessment data and materials.
- To effectively analyse rater data to inform educational standards and practices.

miro

Persona: Prof.Emma Green

Demographics

Age: 45
Education: PhD Language Teaching and Learning
Occupation: IT Project Manager



"I aim to streamline user management processes and ensure the highest level of security for the platform."

Pain Points & Frustrations

- Current LMS platforms do not meet her requirements as it is hard to use for newcomers.
- Collaboration with raters is often cumbersome due to inflexible platforms.
- faces challenges related to balancing usability with strict security requirements.
- The difficulty on managing users and the learning materials.

Role: Admin

Behaviors & Habits

- Emma usually has to spend the majority of her time on research.
- She prefers platforms which are intuitive and require minimal training for new users.
- She prefers practical solutions that are easy to implement and maintain.
- Emma is proactive and enjoys staying updated on the latest technology trends and security protocols.

Needs & Goals

- Emma is willing to invest in software solutions that meet her organization's needs and align with its security standards.
- she prioritizes reliability, scalability, and ease of use when considering new IT systems.
- Emma values collaboration and open communication.
- Emma appreciates tools that allow her team to work efficiently and securely, even when working remotely.

miro

Persona: Mr.Rupter Goldie

Demographics

Age: 37

Education: MA of linguistics

Occupation: Professional Linguist at the Research Centre at the University of Melbourne



"I work as a linguist specializing in language assessments. Moreover, I value confidentiality and adheres to strict ethical standards in my work.."

Pain Points & Frustrations

- He encounters challenges related to managing time efficiently while completing multiple rating tasks within project deadlines.
- He also needs user-friendly tools that facilitate the rating process and provide clear instructions for each task.
- Concerns over the security of confidential assessment data on generic LMS solutions.
- The difficulty on conducting a rating operations or undo the rating in the existing platform.

Role: Rater

Behaviors & Habits

- Rupter usually has to spend the majority of her time on his career work.
- He is dedicated to their work and enjoys engaging in intellectually stimulating activities.
- He prefers structured environments that allow them to focus on tasks with minimal distractions.
- Rupter takes security matters as the highest priority because it involves other privacy and sensitive data.

Needs & Goals

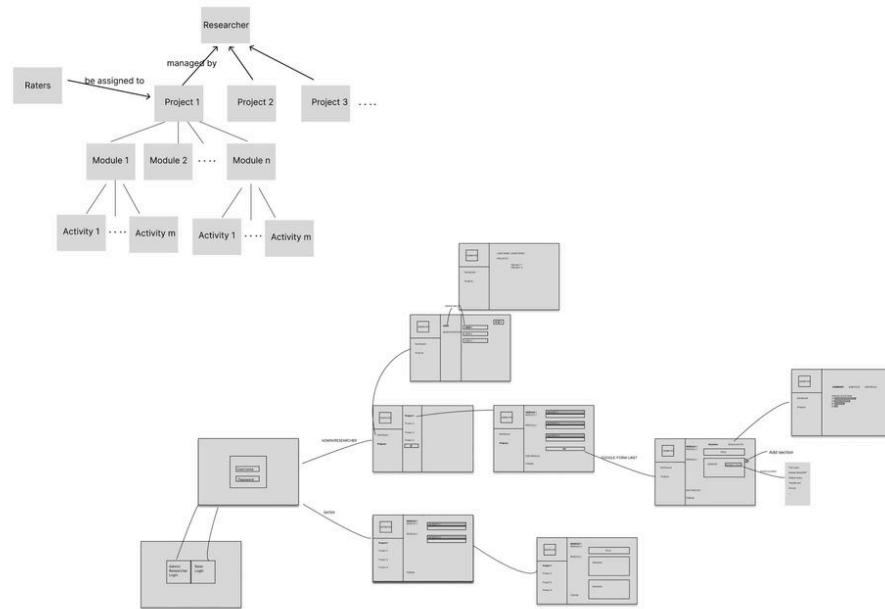
- Rupter aims to contribute valuable insights to research projects by providing accurate ratings and feedback.
- He is likely to adopt software solutions that streamline the rating process and provide comprehensive support for their research endeavors.
- To securely handle sensitive assessment data and materials.
- He prioritizes platforms that offer user-friendly interfaces and robust security features to safeguard confidential data.

miro

Prototype

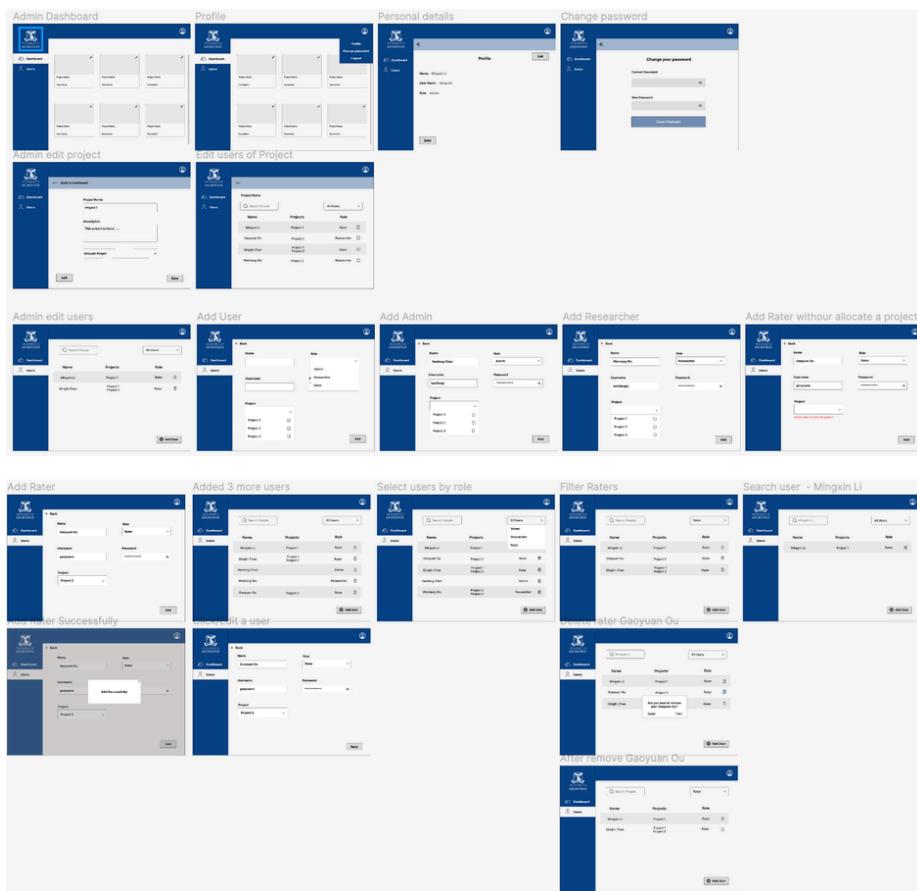
Low Fidelity Prototype

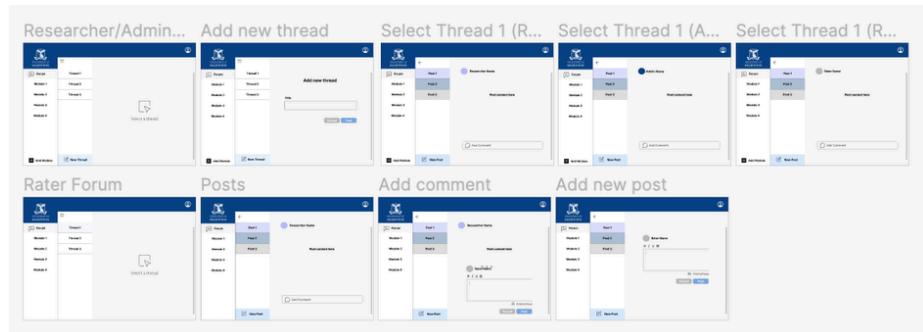
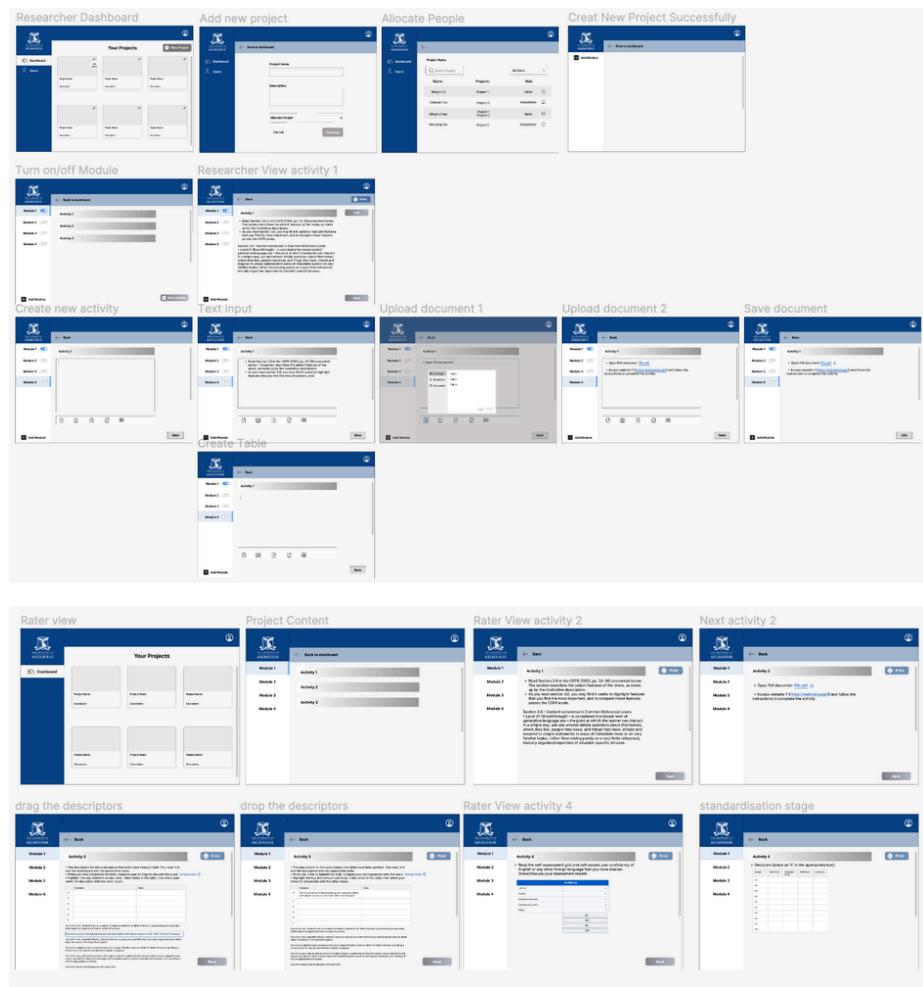
[Figma Link](#)



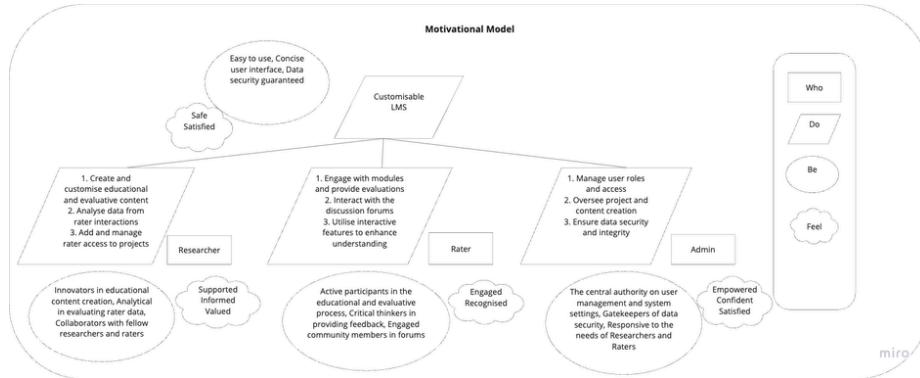
High Fidelity Prototype

[Figma link](#)





Motivational Model



Do/Be/Feel

Role	Do(Functional Goal)	Be(Quality Goal)	Feel(Emotional Goal)
Admin	<ul style="list-style-type: none"> Manage user roles and access Oversight project and content creation Ensure data security and integrity 	<ul style="list-style-type: none"> The central authority on user management and system settings Gatekeepers of data security Responsive to the needs of Researchers and Raters 	<ul style="list-style-type: none"> Empowered to maintain a robust and secure system Confident in managing a user-friendly platform Satisfied with the system's performance and reliability
Researcher	<ul style="list-style-type: none"> Create and customise educational and evaluative content Analyse data from rater interactions Add and manage rater access to projects 	<ul style="list-style-type: none"> Innovators in educational content creation Analytical in evaluating rater data Collaborators with fellow researchers and raters 	<ul style="list-style-type: none"> Supported by tools that facilitate creative content development Informed by comprehensive data analytics Valued for their contributions to the project's success
Rater	<ul style="list-style-type: none"> Engage with modules and provide evaluations Interact with the discussion forums Utilise interactive features to enhance understanding 	<ul style="list-style-type: none"> Active participants in the educational and evaluative process Critical thinkers in providing feedback Engaged community members in forums 	<ul style="list-style-type: none"> Engaged by interactive and relevant content Recognised for their input and evaluations Part of a larger community of practice

Do/Be/Feel List

User Stories

Estimating effort for project tasks involves assessing the complexity, time, resources, and expertise needed to complete each task. We use three approaches to aid in this process.

- **Historical Data** involves utilising information from previous similar projects to provide a baseline for how long tasks might take, allowing for more accurate forecasting.
- **Planning Poker** is a collaborative and consensus-based technique where team members use numbered cards to represent the complexity of a task, thus combining diverse insights to arrive at a balanced estimate.
- **Breakdown Structure** entails dividing tasks into smaller, manageable components and estimating them individually, which enhances the accuracy of the overall effort estimation by addressing each component's specific challenges and requirements.

Allocating tasks based on team members' skills and experience ensures that each task is handled efficiently and effectively.

One useful tool for this is a **Skill Matrix**, which maps team members' skills and experiences against the requirements of each task, helping identify the most suitable individuals for each task. Additionally, considering **Preference and Development Opportunities** during task allocation can provide personal growth benefits. Through assigning tasks that challenge team members, we can not only meet project needs but also foster professional development. Finally, **Team Discussion** plays a crucial role in this process. Holding discussions in team meetings about task allocations ensures that everyone is on the same page, understands the rationale behind assignments, and is committed to the tasks at hand. This approach not only promotes transparency but also enhances overall team commitment and cohesion.

We use story points from 1 to 5 to estimate the complexity, effort, and time required to complete a task or feature, where each number represents an increasing level of complexity and effort needed. Story point 1 means it is trivial to complete a task while story point 5 demonstrates extremely difficult to finish a task.

Epic 1 - User Management

No.	As a <Role>	I want to <Do something>	So that <achieve some goals>	Acceptance Criteria	Priority	Task Size	Test Result
1	Users (Admin/Researcher/Rater)	Log into account	I can access account information/ change profile etc..	<ul style="list-style-type: none">• Users can log in using their credentials.• Successful login redirects to the user dashboard.• Error handling for incorrect login details.	High	2	Pass
2	Users (Admin/Researcher/Rater)	Update passwords	I can keep my data and my account safe	<ul style="list-style-type: none">• Users can request a password change.• System validates password strength.	High	1	Pass
3	Users (Admin/Researcher/Rater)	Edit names	A new name can be displayed on discussion forums and all the old posts	<ul style="list-style-type: none">• Users can change their name in their profile settings.	Medium	1	Pass

				<ul style="list-style-type: none"> Changes are reflected across all user's forum posts. 			
4	Admin	Add or remove users with assigned roles	I can create admins for administration. Create researchers for projects. Create raters for rating.	<ul style="list-style-type: none"> Admin can create accounts for admins, researchers, and raters. Admin can delete users. The system updates access levels based on role. 	High	2	Pass
5	Admin	Access all the projects, forum posts, user info	I can have all access to manage everything.	<ul style="list-style-type: none"> Admin dashboard provides an overview of all projects and posts. 	High	2	Pass
6	Admin/Researcher	See the allocated raters from the projects created by me (Implied by requirements)	I know who has been assigned to a specific project	<ul style="list-style-type: none"> Admin/Researchers have a list or report showing raters per project. System allows filtering or searching for specific raters/projects. 	Medium	2	Pass
7	Researcher	Add/remove raters	I can allocate raters in their allocated projects	<ul style="list-style-type: none"> Interface for researchers to manage raters. Changes are updated in real-time in the system. 	High	1	Pass
8	Rater	See which projects allocated to me (Implied by requirements)	I know what projects I can have access to and which activities I can complete	<ul style="list-style-type: none"> Raters have a dashboard or list showing their projects. 	Medium	3	Pass

No.	As a <Role>	I want to <Do something>	So that <achieve some goals>	Acceptance Criteria	Priority	Task Size	Test Result
1	Researcher	Create a new project and manage it	Different raters will have different access to the projects	<ul style="list-style-type: none"> Interface for creating and editing projects. Access control settings for raters. 	High	2	Pass
2	Researcher	Make project available at a specific time	Raters can have access during a specific period of time	<ul style="list-style-type: none"> Scheduling option for project availability. System automatically opens and closes access based on set times. 	High	1	Pass
3	Researcher	Embed downloadable Word, PDF documents, audio, video, simple surveys and sample texts when creating activities	The activities will be more interactive for raters.	<ul style="list-style-type: none"> Support for multiple file types in activity creation. Interactive display of embedded content for raters. 	Medium	5	Pass
4	Researcher	See a overall summary of frequency of rating levels for each sample	I can know how each sample is rated	<ul style="list-style-type: none"> Dashboard or report that summarizes rating frequencies. Filters to view data by project, rater, or sample. 	Medium	2	Drop
5	Researcher/Admin	Download the data (rater's input) from the modules	I can analyse the downloaded data	<ul style="list-style-type: none"> Functionality to export rater data to CSV or Excel. Data includes all inputs and associated metadata. 	High	1	Pass
6	Rated	Enter a rating below a sample text	I can accurately assess the sample	<ul style="list-style-type: none"> Interface for raters to input ratings. Ratings are saved and associated with 	High	1	Pass

				the correct sample.			
7	Rater	Return to my ratings and make changes as needed	ensuring flexibility in my assessments	<ul style="list-style-type: none"> Raters can view and edit their past ratings. System tracks changes for audit purposes. 	High	2	Pass
8	Rater	Download all the text with highlights included	I can compare two descriptions and highlight their differences	<ul style="list-style-type: none"> Text highlighting functionality in the interface. Option to export highlighted text. 	High	1	Drop
9	Rater	Reorder chunks of text on the page	I can organise the information in a way that suits my needs	<ul style="list-style-type: none"> Drag-and-drop functionality for text chunks. Changes are saved for the session or permanently based on project settings. 	Medium	3	Drop
10	Rater	View rating statistics	I can gain overall assessment trends	<ul style="list-style-type: none"> Dashboard or report with statistical analysis of ratings. Filters to narrow down data views (by project, time, etc.). 	Medium	2	Drop

Epic 3 - Forum Management

No.	As a <Role>	I want to <Do something>	So that <achieve some goals>	Acceptance Criteria	Priority	Task Size	Test Result
1	Admin/Researcher	Create threads for particular topic discussion.	Raters will be allowed to post their discussion on that threads to share their thoughts.	<ul style="list-style-type: none"> Users can create new threads with specific topics. 	Medium	3	Pass
2	Rater/researcher	Post my ideas/answer on	I can share my ideas to others and look for others'	<ul style="list-style-type: none"> Interface for posting and formatting 	Medium	2	Pass

		a thread with specific topic.	answer as well.	discussion entries.			
3	Researcher/rater	Reply others' posts.	Join in a discussion to share my answer or ask question further.	<ul style="list-style-type: none"> Users can directly reply to a post, with replies nested under the original post. 	Medium	3	Pass
4	Researcher/admin	Manage existing posts (Delete, mark)	Duplicated post can be removed, and important post can be highlighted.	<ul style="list-style-type: none"> Functionalities to delete posts and highlight or pin important ones. 	Low	2	Pass
5	Researcher	Select some activities then transfer their answers to the thread automatically.	Others will be able to reply to those automatic posts.	<ul style="list-style-type: none"> Mechanism to select activities and push their data to a forum thread. Users can interact with these posts as regular forum entries. 	Low	3	Drop
6	Rater	Request admin/researcher to anonymized my response to a particular post.	Keep my privacy.	<ul style="list-style-type: none"> Option to post anonymously in forum threads. System ensures that the user's identity is not disclosed with the post. 	Very low	4	Drop

Non-Functional Requirements

Testing:

- **Unit Testing:** We utilise frameworks to conduct unit tests ensuring individual components and functions operate as intended. Test cases are written in JavaScript to cover a wide range of expected outcomes.
- **API Testing:**
 - **Postman:** This tool is used for API testing to ensure that all endpoints meet their contract in terms of response format, error handling, and performance under load. Postman collections can be shared within the team to ensure consistency and comprehensiveness of API testing.
- **Integration Testing:** To validate the interactions between modules, tools like Mocha or PyTest will be used depending on the programming language in sprint 3.
- **End-to-End Testing:** Tools like Selenium or Cypress will provide automated browser testing to simulate real user scenarios in sprint 3.

Security:

- **Authentication:** Utilises JWTs for secure authentication and session management.
- **Authorisation:** Implements role-based access control (RBAC) to ensure users can only access functionalities relevant to their permissions.

Development Environments:

- **Development:** A local environment where developers can work independently on features without affecting the live product.
- **Pre-production (Staging):** Mirrors the production environment for testing. Changes are deployed here before production to catch any last-minute issues.
- **Production:** The live environment accessible to end-users.

IDE and Tools:

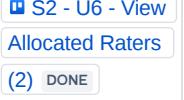
- **Integrated Development Environment (IDE):** Developers can use their preferred IDEs such as Visual Studio Code, IntelliJ IDEA, or others suitable for the stack used.
- **Version Control:** Git, with GitHub or GitLab to manage code versions and collaborate.
- **Continuous Integration/Continuous Deployment (CI/CD):** Tools like Jenkins, CircleCI, or GitHub Actions automate the deployment of code changes to various environments.

Package Managers:

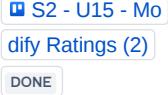
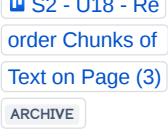
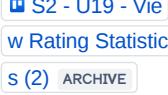
Our project uses **npm** as evidenced by the presence of `package.json` and `package-lock.json` files in our directory. npm helps manage packages required for the project, ensuring that all dependencies are kept up to date and consistent across all environments thanks to the `package-lock.json` file. npm also facilitates the use of scripts that can automate various tasks such as builds, tests, and deployments.

Product Backlog

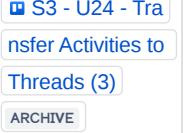
Epic	User Story ID	Story/Scenario	Trello Tasks	Task size	Sub Tasks	Priority
1. User Management	1	As a user (Admin/Researcher/Rater), I want to log into my account so that I can access account information and change my profile.	S2 - U1 - User Login (2) <small>DONE</small>	2	1.1 Users can log in using their credentials. 1.2 Successful login redirects to the user dashboard. 1.3 Error handling for incorrect login details.	High
	2	As a user (Admin/Researcher/Rater), I want to update passwords so that I can keep my data and my account safe.	S2 - U2 - Update Passwords (1) <small>DONE</small>	1	2.1 Users can request a password change. 2.2 System validates password strength.	High
	3	As a user (Admin/Researcher/Rater), I want to edit my name so that a new name can be displayed on discussion forums and all the old posts.	S2 - U3 - Edit Names (1) <small>DONE</small>	1	3.1 Users can change their name in their profile settings. 3.2 Changes are reflected across all user's forum posts.	Medium
	4	As an Admin, I want to add or remove users with assigned roles so that I can create admins for administration, researchers for projects, and raters for rating.	S2 - U4 - Add or Remove Users (2) <small>DONE</small>	2	4.1 Admin can create accounts for admins, researchers, and raters 4.2 Admin can delete users. 4.3 The system updates access levels based on role.	High

	5	As an Admin, I want to access all the projects, forum posts, and user info so that I can manage everything.		2	5.1 Admin dashboard provides an overview of all projects and posts.	High
	6	As an Admin/Researcher, I want to see the allocated raters from the projects created by me so that I know who has been assigned to a specific project.		2	6.1 Admin/Researchers have a list or report showing raters per project. 6.2 System allows filtering or searching for specific raters/projects.	Medium
	7	As a Researcher, I want to add/remove raters so that I can allocate raters in their allocated projects.		1	7.1 Interface for researchers to manage raters. 7.2 Changes are updated in real-time in the system.	High
	8	As a Rater, I want to see which projects are allocated to me so that I know what projects I can access and which activities I can complete		3	8.1 Raters have a dashboard or list showing their projects.	Medium
2. Project and Module Management	9	As a Researcher, I want to create a new project and manage it so that different raters will have different access to the projects.		2	9.1 Interface for creating and editing projects. 9.2 Access control settings for raters.	High

10	As a Researcher, I want to make the project available at a specific time so that raters can have access during a specific period of time	S2 - U10 - Tim e-based Project Availability (1) ARCHIVE	1	10.1 Scheduling option for project availability. 10.2 System automatically opens and closes access based on set times.	High
11	As a Researcher, I want to embed downloadable Word, PDF documents, audio, video, simple surveys, and sample texts when creating activities so that the activities will be more interactive for raters	S2 - U11 - Embed Multimedia nd Documents (5) DONE	5	11.1 Support for multiple file types in activity creation. 11.2 Interactive display of embedded content for raters.	Medium
12	As a Researcher, I want to see an overall summary of the frequency of rating levels for each sample so that I can know how each sample is rated	S2 - U12 - Summary of Frequency of Rating Levels (2) ARCHIVE	2	12.1 Dashboard or report that summarizes rating frequencies. 12.2 Filters to view data by project, rater, or sample.	Medium
13	As a Researcher/Admin, I want to download the data (rater's input) from the modules so that I can analyze the downloaded data	S2 - U13 - Download Data (1) DONE	1	13.1 Functionality to export rater data to CSV or Excel. 13.2 Data includes all inputs and associated metadata.	High

14	As a Rater, I want to enter a rating below a sample text so that I can accurately assess the sample		1	14.1 Interface for raters to input ratings. 14.2 Ratings are saved and associated with the correct sample.	High
15	As a Rater, I want to return to my ratings and make changes as needed so that I ensure flexibility in my assessments		2	15.1 Raters can view and edit their past ratings. 15.2 System tracks changes for audit purposes.	High
16	As a Rater, I want to download all the text with highlights included so that I can compare two descriptions and highlight their differences		1	16.1 Text highlighting functionality in the interface. 16.2 Users can save or note reasons for highlights.	High
17	As a rater, I want to download the highlight text so that I don't have to return to the system.		2	17.1 Option to export highlighted text. 17.2 Includes context or metadata about what is being highlighted.	Medium
18	As a Rater, I want to reorder chunks of text on the page so that I can organize the information in a way that suits my needs		3	18.1 Drag-and-drop functionality for text chunks. 18.2 Changes are saved for the session or permanently based on project settings.	Medium
19	As a Rater, I want to view rating statistics so that I can		2	19.1 Dashboard or report with statistical analysis of ratings.	Medium

		gain overall assessment trends		19.2 Filters to narrow down data views (by project, time, etc.).		
3. Forum Management	20	As an Admin/Researcher, I want to create threads for particular topic discussions so that raters will be allowed to post their discussion on those threads to share their thoughts	(1) S3 - U20 - Create Threads for Particular Topics (3) DONE	3	20.1 Users can create new threads with specific topics.	Medium
	21	As a Rater/Researcher, I want to post my ideas/answers on threads so that I can share my ideas with others and look for others' inputs	(1) S3 - U21 - Post Ideas/Answers on Threads (2) DONE	2	21.1 Interface for posting and formatting discussion entries.	Medium
	22	As a Rater/Researcher, I want to reply others' posts so that I can join in a discussion to share my answer or ask question further.	(1) S3 - U22 - Reply to Posts (3) DONE	3	22.1 Users can directly reply to a post, with replies nested under the original post.	Medium
	23	As an Admin/Researcher, I want to manage existing posts so that duplicated post can be removed, and important post	(1) S3 - U23 - Manage Existing Posts (2) DONE	2	23.1 Functionalities to delete posts and highlight or pin important ones.	Low

	can be highlighted.				
24	As a Researcher, I want to select some activities then transfer their answers to the thread automatically so that others will be able to reply to those automatic posts		3	24.1 Mechanism to select activities and push their data to a forum thread. 24.2 Users can interact with these posts as regular forum entries.	Low
25	As a Rater, I want to request admin/researcher to anonymized my response to a particular post so that I can keep my privacy.		4	25.1 Option to post anonymously in forum threads. 25.2 System ensures that the user's identity is not disclosed with the post.	Very low

Sprint

[Sprint 1](#)

[Sprint 2](#)

[Sprint 3](#)

Sprint 1

Plan For Sprint 2

As we already have a better overall understanding of the current project through the communication with our client and with the initial requirements elicitation completed, we are one step closer to start developing the system in the next 2 sprints. This documentation will mainly discuss what should be done in each sprint and how we will develop the system.

Requirements to Develop

During Sprint 2, our team will develop the user management and project/module management functionalities outlined in the provided epics. Here's the plan for Sprint 2:

User Management (Epic 1 From User story 1 to 8):

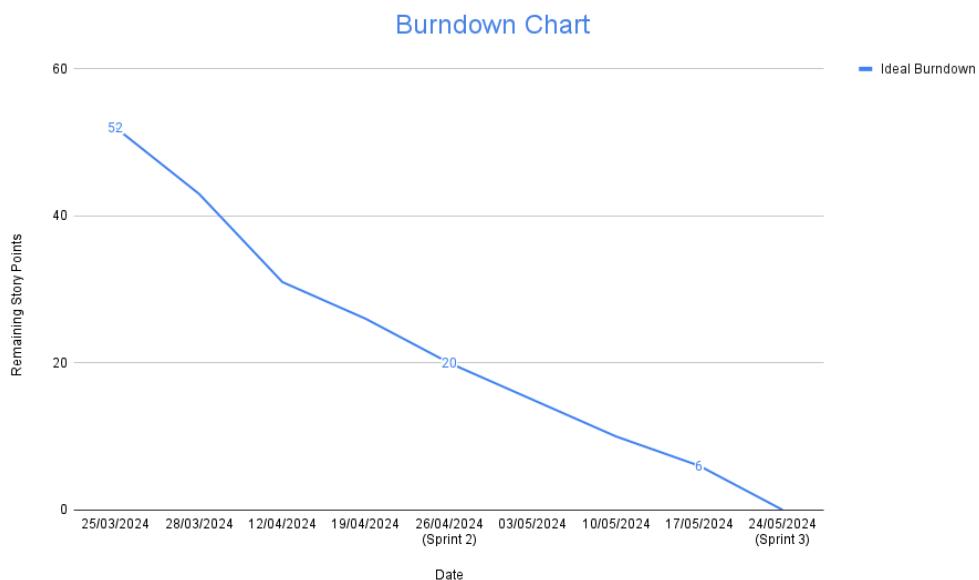
- Implement user (Admin/Researcher/Rater) login and password management functionalities to ensure secure access and account protection.
- Allow users (Admin/Researcher/Rater) to edit their profiles, including changing names and other details.
- Develop features for adding/removing users, managing permissions, and access control.

Project/Module Management (Epic 2 From User story 1 to 11):

- Enable researchers to create and manage projects, including scheduling, embedding capabilities, and statistical features.
- Facilitate effective data rating for raters, allowing them to enter and edit ratings, highlight/reorder text, and rating offline.

Our team has estimated the task sizes and prioritised tasks based on their importance and complexity, ensuring timely delivery and coordination among different functionalities (For more details, see [User Stories](#)). Additionally, appropriate testing and bug fixing will be carried out to ensure product quality and stability.

Below is the burndown chart that we came up with, which indicates the project's velocity and ideal burndown.



User Story ID	Trello Tasks	Task size	Sub Tasks	Assignee
---------------	--------------	-----------	-----------	----------

1	S2 - U1 - User Login (2) DONE	2	<p>1.1 Users can log in using their credentials.</p> <p>1.2 Successful login redirects to the user dashboard.</p> <p>1.3 Error handling for incorrect login details.</p>	Weiyang Wu Gaoyuan Ou
2	S2 - U2 - Update Password (1) DONE	1	<p>2.1 Users can request a password change.</p> <p>2.2 System validates password strength.</p>	Qinglin Zhao Gaoyuan Ou
3	S2 - U3 - Edit Names (1) DONE	1	<p>3.1 Users can change their name in their profile settings.</p> <p>3.2 Changes are reflected across all user's forum posts.</p>	Qinglin Zhao Mingxin Li
4	S2 - U4 - Admin or Remove Users (2) DONE	2	<p>4.1 Admin can create accounts for admins, researchers, and raters</p> <p>4.2 Admin can delete users.</p> <p>4.3 The system updates access levels based on role.</p>	Gaoyuan Ou Mingxin Li Weiyang Wu
5	S2 - U5 - Admin Access to All Projects (2) DONE	2	<p>5.1 Admin dashboard provides an overview of all projects and posts.</p>	Haofeng Chen Gaoyuan Ou Weiyang Wu
6	S2 - U6 - View Allocated Raters (2) DONE	2	<p>6.1 Admin/Researchers have a list or report showing raters per project.</p> <p>6.2 System allows filtering or searching for specific raters/projects.</p>	Haofeng Chen Gaoyuan Ou Weiyang Wu
7	S2 - U7 - Add/Remove Raters in Projects (1) DONE	1	<p>7.1 Interface for researchers to manage raters.</p> <p>7.2 Changes are updated in real-time in the system.</p>	Haofeng Chen Gaoyuan Ou Weiyang Wu
8	S2 - U8 - Rater Project View (3) DONE	3	<p>8.1 Raters have a dashboard or list showing their projects.</p>	Haofeng Chen Gaoyuan Ou Weiyang Wu Qinglin Zhao
9	S2 - U9 - Create and Manage Projects (2) DONE	2	<p>9.1 Interface for creating and editing projects.</p> <p>9.2 Access control settings for raters.</p>	Haofeng Chen Gaoyuan Ou Weiyang Wu

10	<p>S2 - U10 - Time-based Project Availability (1) ARCHIVE</p>	1	<p>10.1 Scheduling option for project availability.</p> <p>10.2 System automatically opens and closes access based on set times.</p>	Mingxin Li Yujin Du Gaoyuan Ou
11	<p>S2 - U11 - Embed Multi media and Documents (5) DONE</p>	5	<p>11.1 Support for multiple file types in activity creation.</p> <p>11.2 Interactive display of embedded content for raters.</p>	Yujin Du Gaoyuan Ou
12	<p>S2 - U12 - Summary of Frequency of Rating Levels (2) ARCHIVE</p>	2	<p>12.1 Dashboard or report that summarizes rating frequencies.</p> <p>12.2 Filters to view data by project, rater, or sample.</p>	Yujin Du
13	<p>S2 - U13 - Download Data (1) DONE</p>	1	<p>13.1 Functionality to export rater data to CSV or Excel.</p> <p>13.2 Data includes all inputs and associated metadata.</p>	Yujin Du
14	<p>S2 - U14 - Enter Rating Below a Sample Text (1) DONE</p>	1	<p>14.1 Interface for raters to input ratings.</p> <p>14.2 Ratings are saved and associated with the correct sample.</p>	Haofeng Chen Yujin Du
15	<p>S2 - U15 - Modify Rating (2) DONE</p>	2	<p>15.1 Raters can view and edit their past ratings.</p> <p>15.2 System tracks changes for audit purposes.</p>	Haofeng Chen Yujin Du
16	<p>S2 - U16 - Highlight Text on Page (1) ARCHIVE</p>	1	<p>16.1 Text highlighting functionality in the interface.</p> <p>16.2 Users can save or note reasons for highlights.</p>	Yujin Du Gaoyuan Ou
17	<p>S2 - U17 - Download Highlighted Text (1) ARCHIVE</p>	2	<p>17.1 Option to export highlighted text.</p> <p>17.2 Includes context or metadata about what is being highlighted.</p>	Yujin Du Gaoyuan Ou
18	<p>S2 - U18 - Reorder Chunks of Text on Page (3) ARCHIVE</p>	3	<p>18.1 Drag-and-drop functionality for text chunks.</p> <p>18.2 Changes are saved for the session or permanently based on project settings.</p>	Yujin Du Gaoyuan Ou
19	<p>S2 - U19 - View Rating</p>	2	<p>19.1 Dashboard or report with statistical analysis of ratings.</p>	Yujin Du

After a discussion within our team, we decided to use React.js as our front-end development framework, Express.js as our back-end framework and MongoDB as our database as it works well with Express.js.

React.js is a popular front-end framework that allows us to create reusable UI components for different parts of the website and it also makes it simpler for us to manage the state of the components.

Express.js is a back-end framework for Node.js that simplifies routing, middleware usage and handling HTTP requests. Using Express.js also allows us to use the same language (Javascript) both in front-end and back-end and it will make the development process a lot easier.

In terms of collaboration, we will use Git to manage the version of our codebase and GitHub to host our remote repository. Some features from Git enable better and smoother collaboration. Committing allows us to make changes to our local copy of the codebase and then commit and upload these changes to the remote repository so that other team members can also see the changes. Branching allows us to work on our own branch. For example, if 2 independent features need to be developed simultaneously, we can have 2 different branches for different features so that we can improve the efficiency of the development.

Sprint 1 Review

What we did well in sprint 1:

Collaboration and Teamwork: Our team has excelled at working together, especially when tackling complex problems. There's a strong sense of mutual support, which has led to creative solutions and a positive working environment.

Adherence to Agile Principles: Our team has been consistently good at maintaining the flexibility required by Agile methodologies, effectively responding to changes in requirements and priorities without significant disruptions.

Quality of Work: The delivered work generally exceeds the expected quality standards, with few issues reported after the release of grade. This is a testament to the team's attention to detail and commitment to excellence.

Effective Communication: The team has established a strong communication framework that ensures everyone is on the same page. Regular stand-ups, clear channels on WeChat, and open hours with our client have fostered an environment where information flows freely and efficiently.

Responsive to Feedback: Our team has shown a remarkable ability to respond to feedback, whether it comes from within the team or from stakeholders. This responsiveness is about genuinely considering the feedback, discussing its implications, and implementing it in a way that improves the project while staying aligned with overall objectives.

What we can improve in sprint 2:

Refine Technical Skill Assessment: Given the team's current learning curve with new techniques, it's crucial to assess each team member's technical skills more accurately. This assessment will help in better matching tasks to individual capabilities. By doing so, we can ensure a more balanced distribution of workload and potentially prevent the need to push uncompleted stories to Sprint 3. Additionally, scheduling targeted technical meetings might accelerate the team's proficiency and confidence with unfamiliar technologies.

Emphasise Documentation: Allocating specific times for updating documentation during the sprint, perhaps treating it as a sprint deliverable, could improve this area. Encouraging a culture that values documentation through incentives or recognition might also help.

1. Overview of Sprint Goals

Sprint Goals: Our primary objective for this sprint was to develop comprehensive documentation on Confluence detailing the product's background, goals, persona, user stories, and a motivational model to guide further development. This foundational work is crucial for aligning the team and stakeholders with the project's direction and ensuring a unified understanding of the target users and objectives.

2. Completed Items

- **Project Background and Goals:** We have successfully documented the project's inception, its overarching goals, and the strategic vision which will drive future developments.
- **Persona:** The persona documentation has been completed, providing a detailed and empathetic understanding of our target user group. This will help in tailoring the product's design and functionality to meet the specific needs and preferences of our users.
- **Prototype:** A functional prototype has been developed, which embodies our initial design concepts and interactions as outlined in the user stories.
- **Motivational Model:** The motivational model has been crafted to articulate the intrinsic and extrinsic factors that motivate our users. This model is essential for designing features that engage and retain users effectively.
- **User Stories:** All intended user stories have been documented. These stories detail the functionalities needed to fulfill user requirements and serve as a guide for development tasks in upcoming sprints.
- **Plan for Sprint 2 and 3:** We have outlined detailed plans for the next two sprints, including timelines, expected deliverables, and resource allocation. This planning ensures a clear roadmap and helps in setting realistic expectations for the team and stakeholders.

3. Moving Forward

As we transition into Sprints 2 and 3, our focus will shift towards the development of product functionalities as mentioned in our user stories. We will continue to update our documentation on Confluence to reflect any changes or enhancements made during these sprints.

4. Challenges and Solutions

- **Challenges:** As we worked on the extensive documentation for Confluence regarding the product's background, goals, persona, and user stories, we encountered a challenge with maintaining consistency and clarity across different sections. Different team members had varying interpretations of the information, which led to inconsistencies that could confuse stakeholders and team members alike.
- **Solutions:** To resolve this issue, we instituted a documentation review process where each major section completed by a team member was peer-reviewed by another member. This not only ensured that all documentation was clear and consistent but also allowed for different perspectives to enhance the overall quality of the content.

5. Stakeholder Feedback

- **Feedback Summary:** Overall positive; looking forward to our product and appreciate our efforts.

7. Closing Remarks

- **PO's Remarks:** This sprint has set a solid foundation for the project, providing clear documentation and initial prototypes that align closely with the strategic goals. The successful completion of these tasks not only keeps the team on track but also builds a strong basis for the next phases of development.
- **Scrum Master's Note:** We are satisfied with the our hard work and dedication and look forward to continuing this momentum in the upcoming sprints.

Sprint 2

Plan For Sprint 3

During Sprint 3, we will focus on enhancing the forum management functionalities as outlined in Epic 3 and implementation of activity functionality listed in Epic 2. Here's the detailed plan for Sprint 3:

Activity Implementation (Epic 2 From User Story 13 to 17):

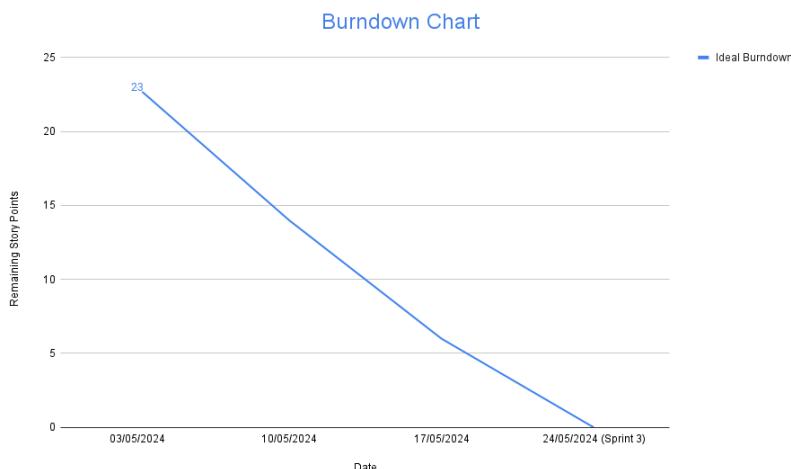
- Researchers can download data from the activities.
- Raters can enter a rating below a sample text.
- Raters can return to their ratings and make changes.
- Raters can highlight text on page and download the highlighted text.

Forum Management (Epic 3 From User story 20 to 25) :

- Admins/researchers can create discussion threads and manage and maintain existing posts.
- Researchers/raters can post their ideas and answers, and reply to others' posts.
- Researchers can transfer their answers to the thread automatically.
- Raters can request the anonymisation of their responses.

Our team has estimated the task sizes and prioritised tasks based on their importance and complexity in sprint 2 (For more details, see [User Stories](#)). Additionally, appropriate testing and bug fixing will be carried out to ensure product quality and stability.

In sprint 3, we will create a new burndown chart. Below is the burndown chart that we came up with, which indicates the project's velocity and ideal burndown.



User Story ID	Trello Tasks	Task size	Sub Tasks	Assignee
20	S3 - U20 - Create Threads for Particular Topics (3) DONE	3	20.1 Users can create new threads with specific topics.	Qinglin Zhao Gaoyuan Ou Haofeng Chen
21	S3 - U21 - Post Ideas/Answers	2	21.1 Interface for posting and formatting discussion entries.	Qinglin Zhao Gaoyuan Ou

	Answers on Threads (2) DONE			Haofeng Chen
22	S3 - U22 - Reply to Posts (3) DONE	3	22.1 Users can directly reply to a post, with replies nested under the original post.	Qinglin Zhao Gaoyuan Ou Haofeng Chen
23	S3 - U23 - Manage Existing Posts (2) DONE	2	23.1 Functionalities to delete posts and highlight or pin important ones.	Qinglin Zhao Yujin Du Haofeng Chen
24	S3 - U24 - Transfer Activities to Threads (3) ARCHIVE	3	24.1 Mechanism to select activities and push their data to a forum thread. 24.2 Users can interact with these posts as regular forum entries.	Qinglin Zhao Gaoyuan Ou
25	S3 - U25 - Anonymise Responses (4) ARCHIVE	4	25.1 Option to post anonymously in forum threads. 25.2 System ensures that the user's identity is not disclosed with the post.	Qinglin Zhao Haofeng Chen Mingxin Li

Sprint 2 Review

What we did well in sprint 2:

Task Allocation: The team fully recognises the importance of task allocation in project development. By dividing the project into front-end and back-end sections, and implementing a system where half of the members are responsible for the front-end while the other half handles the back-end, each member can focus on their respective areas and complete tasks efficiently within a short period. Simultaneous development strategy has been adopted to effectively enhance development efficiency and avoid any downtime caused by waiting for other sections to complete.

Efficient Communication: The team has demonstrated remarkable efficiency and proactiveness in communication. Weekly meetings have become a crucial platform for members to update progress, raise issues, and exchange ideas. This meeting system not only promotes collaboration and communication among internal team members but also provides an opportunity for collective problem-solving. Additionally, daily discussion groups facilitate timely sharing of progress, discussing issues, and suggesting ideas, thereby strengthening team cohesion and collaboration.

Work Quality: Team members have shown self-discipline and a sense of responsibility towards work quality. Through self-learning and effort, almost every member has completed their tasks and met the expected standards. They not only complete tasks but also continuously reflect and learn throughout the process to improve work quality and efficiency.

Problem-Solving Skills: Facing various challenges during the development process, the team has demonstrated strong problem-solving abilities. Instead of working in isolation, they actively seek opinions and assistance from others through team collaboration, swiftly finding solutions to problems. Even when unable to solve problems internally, they promptly seek external assistance to ensure project progress and quality remain unaffected.

Responsiveness to Feedback: Team members maintain a positive attitude towards feedback, willingly accepting and responding to opinions and suggestions from others. Whether it's issues raised in meetings or discussions in the group, they respond promptly, actively engage in discussions, and contribute to problem-solving. This positive communication attitude not only helps the team address issues but also fosters trust among team members.

What we can improve in sprint 3:

During this sprint, the team encountered challenges related to underestimating the complexity and time required for certain features, leading to their incomplete implementation. To address this, it is essential for us to enhance our awareness of potential issues early in the development cycle. We should proactively communicate any difficulties encountered during development in client meetings, and propose appropriate solutions. Alternatively, we may prioritize completing the requirements in subsequent sprints.

Presenting the current progress to the client midway through the project is a highly valuable practice as it provides the client with an opportunity to review and provide feedback on the project's development. This real-time feedback mechanism helps ensure that the project meets the client's expectations and requirements from the outset, thus avoiding extensive modifications and adjustments after the project completion. Additionally, by showcasing interim progress, the team can promptly identify potential issues and challenges and address them to ensure smooth project progression. Such proactive communication and transparency not only contribute to building strong client relationships but also demonstrate the team's professionalism and commitment, further enhancing client trust and satisfaction.

Date: 21/05/2024

Attendees: Development Team, Product Owner, Scrum Master, Key Stakeholders

1. Overview of Sprint Goals

Sprint Goals: Implement key functionalities in User and Project/Module Management.

- **User Management Features:** Login and password management, profile editing, and user role management.

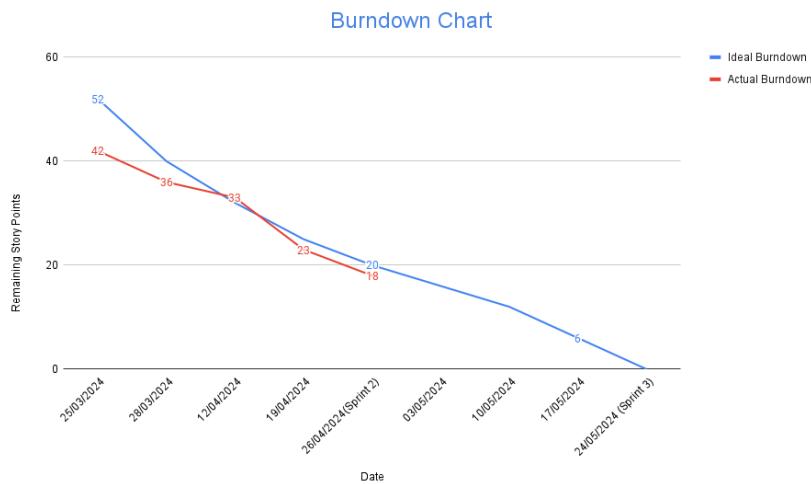
- **Project/Module Management Features:** Creation and management of project and module, and implementation of activity embedded capabilities.

2. Completed Items

- **User Stories Completed:** 11 out of 19 planned, 5 user stories dropped after discussion with client.
- **Story Points Completed:** 24 out of 38, 10 story points dropped after discussion with client.
 - **User Management:** 14 points completed out of 14.
 - **Project/Module Management:** 8 points completed out of 21, 9 story points dropped after discussion with client.

3. Burndown Chart Review

- **Present Burndown Chart:**



- **Analysis:** The chart indicates that the team drop of some story points and make significant progress in the latter half of the sprint, catching up to the planned trajectory.

4. Team Velocity

- **Velocity This Sprint:** The team completed 24 story points, maintaining a relevantly consistent velocity and is expected to complete the rest story points in sprint 3.
- **Implications:** Consistent velocity suggests stable team performance, but there's room to increase efficiency.

5. Product Increment Demonstration

- **Demonstration of New Features:** The development team demonstrates the new login system, user profile editing, and project management tools.
- **Feedback Received:** Product Owner and stakeholder express satisfaction with the user management and project/module management but hope the entire progress can be accelerated to finish before the sprint 4.

6. Challenges and Solutions

- **Challenges:** We encountered technical challenges with the embedded functionality in the activity, specifically affecting video playback.
- **Solutions:** To address this issue, we plan to hold a technical meeting where the backend and frontend teams can collaborate. During this session, both teams will discuss and agree on a coordinated approach to solve the problem. After aligning on the strategy, we will assign specific tasks to each team to ensure the functionality is corrected and optimised.

7. Stakeholder Feedback

- **Feedback Summary:** Overall positive; she is satisfied with our work outcome and appreciate our efforts.

8. Direction for Next Sprint

- **Next Sprint Focus:** Enhancing forum management functionalities, and finishing rating and downloading data functions.
- **Sprint Goals:** Implement forum features, rating function, and downloading data function.

9. Closing Remarks

- **PO's Remarks:** Appreciation for the team's effort and encouragement to focus on quality in the upcoming sprint.
- **Scrum Master's Note:** Commendation for the team's adaptation to challenges and reminder of the upcoming sprint planning meeting.

Sprint 3

Plan for Sprint 4

In this sprint stage, the development phase of the project has been mostly completed, and our goal is to ensure the delivery phase of the project. To achieve this, we will accomplish the following tasks for future development and maintenance:

- Create a well-organized release version and deliver it to the client on GitHub. This release version will include all project documents, tests, data samples, prototypes, and images. We will download the release version from GitHub, pack it into a ZIP file, and send it to the client.
- Produce a product demonstration video to showcase the features and characteristics of our product.
- Prepare user documentation and technical documentation for handover purposes.
- Deploy the product and provide a URL on the README page of GitHub, allowing the client to access the current version of the software.

Task	Sub Tasks	Assignee
Maintain Github	1. Maintain and update Github AI codereview	Qinglin Zhao
	2. Maintain Github's project documents	Haofeng Chen
Produce a product demonstration video to showcase	1. Showcase key contents to audience 2. Edit demonstration video to suitable length	Gaoyuan Ou
Prepare user documentation and technical documentation	1. Prepare required documents and establish discussion about handover with client 2. Append other necessary documents for handover	Weiyang Wu Haofeng Chen
	2. Organise meeting notes	Mingxin Li
Project deployment	1. Update and maintain frontend and backend deployment servers according to GitHub updates 2. Maintain deployed product's data, remove unnecessary ones	Yujin Du Gaoyuan Ou

Presentation Powerpoint Slides



Ethics and Security

Cyber Security

Ethical Considerations

Cyber Security

User Authentication

Sign-in JavaWebToken (JWT) encryption

- **Secret key:** In order to authenticate users when logging in, a JWT token is generated with the user's ID and a random secret key stored in the server and then is sent to the user. When a user sends a JWT token along with some requests, the server compares this token with one generated from the secret key. If both the tokens are the same, then the user is indeed whom he/she claims to be. The design of using a secret key stored in the server prevents malicious users from forging a fake token with a user ID to log in to someone else's account.
- **JWT lifetime:** Each of the JWT would have a lifetime that specifies when the token will be expired. In case where attackers obtain a correct JWT, this design limits the time the attackers can abuse with this token, and potentially reduces the impact from the attackers. This lifetime is subject to change in configuration.

Password encryption, constraints and protection

- **Salt and pepper:** In order to keep passwords safe, when generating a new password, a random salt will be generated in some number of rounds and also be hashed along the password. This design could prevent leaking sensitive information if database is compromised and hashing with salt will make it harder for attackers to decrypt passwords.
- **Password constraints:** When a user is created with a password, it is required that the password would have a minimum length of eight characters. This design is to reduce the chances that passwords are compromised by rainbow attacks because increasing the length of the password would increase the size of the rainbow table.
- **Password storing:** User passwords are not stored in plain text in the database, instead, the passwords are hashed into strings and then these hashes are stored in the database. In case the database is compromised, attackers could not make use of the hashed passwords directly but would also need to obtain the passwords' salts and peppers.

User Authorisation

Prevention of broken access control

- **Prevention of Insecure Direct Object Reference (IDOR):** IDOR occurs when an unauthorised user is able to access an object by inputting the object's identifier. In our case, raters can access some other projects or modules which they do not have access to, or researchers can access other researchers' projects without their permission. To prevent IDOR happening, our backend system verifies a user's document access everytime the user requests a document along with the document ID. In the meantime, the system would also run a validator to ensure that the incoming document ID is a valid ID.
- **Least privilege access:** This is a principle in which users are only given minimal access to perform their operations. In our case, some of the functionalities that only researchers and admin can perform – such as creating a project – are never provided to raters at any cases. Raters are only able to obtain information that is relevant to their operations.

Data validation and sanitisation

- **Data validator:** Validating data is essential to avoid data tampering. In this project, when users are passing a ID to access a particular object, this ID is then validated against the existing object in the database, to ensure that the ID is in the correct format and is valid. For instance, when a rater is passing a project ID to access to a particular project, the system would validate if that ID is valid and really belongs an existing project.

- **NoSQL injection attack prevention:** The system implemented packages to prevent NoSQL injection. An example of NoSQL injection is shown below. This example demonstrates that using NoSQL injection, attackers can bypassing the input of username and therefore potentially access admin account.

The screenshot shows the Postman interface with a project named "LP-project". In the "User" collection, there is a "User login" endpoint. The request method is POST, and the URL is "localhost:3000/users/login". The "Body" tab shows raw JSON input:

```

1 {
2   "username": "$gt":"",
3   ... "password": "password"
4 }

```

The response status is 200 OK, and the response body is:

```

1 {
2   "status": "success",
3   "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJpc3MiT2MwMDA0MjYyNzU3MjIwNTZLisImhdCI6MTcxMzg2OTI40Wl2XhwIjoxNzE0MSNTg4fQ.0wCwCAzInWjXtSS3I6y9b-100szd7YgTe5f5112k",
4   "data": {
5     "user": {
6       "_id": "661e6858bf89efee729d52af",
7       "name": "admin2",
8       "username": "admin",
9       "role": "admin",
10      "v": 0,
11      "passwordChangedAt": "2024-04-18T03:37:26.499Z"
12    }
13  }
14 }

```

As a result, packages are used to prevent this from happening. Once protection is implemented, NoSQL injections should trigger errors and will not give attackers access.

The screenshot shows the Postman interface with the same setup. The request method is POST, and the URL is "localhost:3000/users/login". The "Body" tab shows raw JSON input:

```

1 {
2   "username": "$gt":"",
3   ... "password": "password"
4 }

```

The response status is 500 Internal Server Error, and the response body is:

```

1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4 <meta charset="utf-8">
5 <title>Error</title>
6 </head>
7 <body>
8 <pre>CastError: Cast to string failed for value "{}" (type Object) at path "username" for model "User"<br>  at SchemaString.cast (/mnt/c/Users/AD/Desktop/2024/Semester1/COMP90082 Software Project/Assignments/LP-Koala/src/back-end/node_modules/mongoose/lib/schema/string.js:666:11)<br>  at SchemaType.applySetters (/mnt/c/Users/AD/Desktop/2024/Semester1/COMP90082 Software Project/Assignments/LP-Koala/src/back-end/node_modules/mongoose/lib/schemaType.js:1236:12)<br>  at SchemaString.castForQuery (/mnt/c/Users/AD/Desktop/2024/Semester1/COMP90082 Software Project/Assignments/LP-Koala/src/back-end/node_modules/mongoose/lib/schema/string.js:692:17)<br>  at cast (/mnt/c/Users/AD/Desktop/2024/Semester1/COMP90082 Software Project/Assignments/LP-Koala/src/back-end/node_modules/mongoose/lib/cast.js:394:34)<br>  at Query.cast (/mnt/c/Users/AD/Desktop/2024/Semester1/COMP90082 Software Project/Assignments/LP-Koala/src/back-end/node_modules/mongoose/lib/query.js:4786:12)<br>  at Query._castConditions (/mnt/c/Users/AD/Desktop/2024/Semester1/COMP90082 Software Project/Assignments/LP-Koala/src/back-end/node_modules/mongoose/lib/query.js:4786:12)

```

- **Cross-Site Scripting (XSS) attack prevention:** Similar to NoSQL injection protection, XSS protection is also implemented to prevent attackers inserting malicious contents to display misguiding contents to other users (for example, server-side cross-site scripting). The example below shows that sensitive symbols and tags such as "<div>" are converted to other formats to avoid XSS.

The screenshot shows a Postman interface with the following details:

- Request Method:** POST
- URL:** localhost:3000/users/createUser
- Body Content:**

```

1 {
2   "name": "<div id = 'XSS attack'> malicious codes </div>",
3   "username": "test xss",
4   "password": "password",
5   "role": "rater",
6   "projects": ["662237dabf6d53057f3003ba"]
7 }
```
- Response Status:** 201 Created
- Response Body (Pretty JSON):**

```

1 {
2   "status": "success",
3   "data": {
4     "user": {
5       "name": "&lt;div id = 'XSS attack'> malicious codes &lt;/div&gt;",
6       "username": "test xss",
7       "password": "$2a$15$J9cYJjvx0.Vly7HXPS1D.BP1CVIfa6ZTID5t4h6H52C3MzulB4.W",
8       "role": "rater",
9       "_id": "66271eb0a11da4de4b0a8b6f",
10      "__v": 0
11    }
12  }
13 }
```

- **HTTP Parameter Pollution (HPP) attack prevention:** Similar to NoSQL injection and XSS attacks, HPP attacks are also prevented with the use of relevant packages. This is to ensure that attackers cannot tamper with parameters, for example, by passing the parameter “username” twice in a request, to cause unexpected damages to database or to cause data leakages in any way.

Design Concerning About DDoS Attacks and Authentication

- When designing how should an admin create a rater, our team's initial proposal is first to create a register webpage for raters to input their own name, username and password, and then wait for admin approving for creating their accounts. The admin would be able to approve or reject the rater's request in a request inbox. Later, this design raised the concerns in which attackers may send enormous amounts of account creation request as a Denial of Service attack. There was also no way to authenticate as to whether the user creating the account is really the person the attacker claims to be. For instance, an attacker may pretend to be a rater Bob and register under the attacker's email address and password but with Bob's real name. As a result, our team proposed to stick to the original design in which an admin is able to create a user with role, name, username and password, and then manually distribute account information via email to the corresponding person. Considering the small size of users for this system, this method is applicable and secure.

Logging and Error Handling

- In many of the cases where user performance results in errors, for example, accessing an object without logging in, the system would return an error message to the client indicating exactly that log-in is required. The system will not return an error message that contains the detailed error loggings. As our team is currently in development stage, some of the functionalities will still have error loggings, later this project is separated into production and development modes. And in production mode, only necessary error messages are displayed and error loggings will not be returned.

Risk Analysis

ID	Risk Statement	Risk Triggers	Probability (0%-100%)	Impact (1-10)	Risk Justification
1	Failure to uphold authentication in access objects resulting in unauthorised users obtaining credential materials.	Detection of requests to access unauthorised contents.	30% Medium	8 High	<p>Considering that there are multiple objects that can be accessed by three different types of users – admin, researcher, rater – negligence in authentication protection is likely to happen.</p> <p>The impact is high since research materials should be confidential and never be disclosed without permission from their owners.</p>
2	Malicious contents inserted into server due to inadequate data sanitisation against server-side cross-site scripting could result in attackers fishing out users' responses and information.	Detection of uncommon inputs that resembles injection/XSS attacks.	15% Low	7 High	<p>Since the system has employed latest community-well-tested packages to prevent possible NoSQL injections and XSS attacks, it is unlikely that this risk will occur.</p> <p>However, if the attackers find a way to inject malicious HTTP contents via channels such as text responses or comments, users may be misguided to other webpages to give away their user information/responses.</p>
3	Insufficient protection against rainbow attacks or dictionary attacks could result in administrator accounts compromised and important data can be easily obtained with admin's privilege.	Floods of incoming traffic from unexpected sources.	15% Low	10 High	<p>Since the system has employed long, random salt and pepper to hash passwords, and JWT tokens are well protected with reasonable lifetime, it is unlikely that passwords/tokens are compromised by these brute-force attacks.</p> <p>However, if the admin account is compromised, then attackers will gain full access to the data and functionalities of the system, which will lead to disastrous consequences.</p>
4	A critical vulnerability discovered in a third-party package could lead to security of data being compromised,	Failure in third-party security assessments or audits.	10% Low	9 High	Considering that the system has employed popular, well-maintained packages for security and data sanitisation, it

	leading to rater privacy concerns and confidential materials exposed.		is unlikely for the packages to have critical errors. The impact is high since vulnerability in third-party packages could potentially give attackers opportunities to perform injection or XSS attacks, which could result in admin account's compromisation.
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Contingency Plan

Prevent

1. Factory method or middlewares should be used to handle access control as a whole so that extention and maintainance can be made easily, and negligence in this area can be easily identified.
2. Tests should be done in occasion where it requires user's inputs, e.g. comment, username etc.. And so areas to protect can be identified.
3. Employ more methods to protect passwords, which include setting up a limit of incorrect passwod input, using a more secure hashing method such as SHA-512, requesting F2A from time to time when logging in.
4. Keep a list of the third-party packages used, conduct regular audits into third-party softwares' security. Keep track of lastest critical vulnerability from official sources such as <https://owasp.org/>.

Detect

1. Keep a log of user requests, including as much information as possible, such as time, userID, IP address etc. for further detection or analysis of anomalies. This should be able to detect possible attacks from the risks above.
2. Set a trigger if there is a flood of incoming request so that anomalies can be checked.

Response

1. If attacks are detected and taking affect, it is the best to put down the service and fix the corresponding vulnerability.
2. IP addresses that send out suspicious request should be put into blacklist.
3. Considering the scale of this project, forming a dedicated incidence team will be impracticable. However, communication channels can be established beforehand. Once an incident happens, notifying the affected users would mitigate possible negative effects as user may have time to change password and protect their data.

Recover

1. Assess the extent of damage, including data leakage, server downtime, and possible financial loss.
2. Ensure that the fixed system is thouroughly checked for malwares and other vulnerabilities.
3. Keep users updated with the recovery progress, including researchers and raters.

Ethical Considerations

1. **Data Privacy and Security:** Due to the project involving confidential testing data and maybe some potentially sensitive information, it's pivotal to ensure all the data processing complies with related data protection laws. This includes secure storage and controlled access. Through using encrypted storage solutions such as cloud services providing encryption, we can protect data securely. Meanwhile, by implementing role-based access control, we can ensure only authorised users have access to the specific data. This approach can not only allow relevant team members to have access to the specific datasets, but also minimise the risk of data breaches. **Effect on Users:** Enhancing data security measures reassures users that their personal and sensitive data is handled with the utmost care, thereby increasing their trust in the project.
2. **Consent and Transparency:** It's essential to gain the informed consent from testing users and final users, which means providing clear information regarding the purpose of research, what participation involves, and any possible risks. Moreover, don't forget to keep records of consent forms as proof that consent was gained, crucial for compliance with ethical standards and legal regulations. **Effect on Users:** This ensures that users are fully aware of how their data will be used and what to expect, thereby making the user experience more transparent and ethical.
3. **Anonymity:** As mentioned in the project document concerning the chance of anonymising rater responses, ensuring the anonymity of users' data can greatly help protect their privacy and personal information. In addition, it's ideal to ensure that the data shared with third parties for research purposes is properly anonymised to prevent re-identification of users. **Effect on Users:** Anonymity protects users from potential misuse of their data and maintains their privacy, which is particularly important in building and maintaining trust.
4. **Accountability and Honesty:** Maintaining high standards of honesty and integrity in conducting and reporting research is critical, which included acknowledging all contributors and disclosing any conflicts of interest. The conflicts of interest refer to financial interests, affiliations, or any other factors which may affect the impartiality of the research. **Effect on Users:** Upholding these values assures users that the research and its outcomes are conducted fairly and ethically, fostering a deeper trust in the project and its findings.

Additional Team Commitments and Guidelines

To further reinforce our commitment to these ethical considerations, our team will adhere to the following guidelines:

- **Regular Training:** All team members will undergo regular training on the latest data protection laws and ethical research practices to stay updated.
- **Compliance Audits:** Regular audits will be conducted to ensure all practices comply with ethical and legal standards.
- **Open Communication:** A channel for open communication will be established, allowing team members and users to raise concerns about data handling and ethical issues, ensuring that these concerns are addressed promptly and transparently.

These commitments are designed to create a culture of responsibility and transparency within the team, directly impacting how trust and integrity are perceived by all stakeholders, particularly the users.

Meetings

[Client Meetings](#)

[Mentor Meetings](#)

[Team Meetings](#)

Client Meetings

07/03/2024 Client Meeting

Date: 07/03/2024

Time: 11:00AM-11:26AM

Location: ZOOM

Participants: Clients, Mentor, our team, and the other team

Meeting Topic: First Client Meeting of LP

Topic	Content	Actions
1. See the clients	<ul style="list-style-type: none">Provide a brief introduction to the project.Browse the project information document.Know the requirements of this project.	<ul style="list-style-type: none">Prepare a summary presentation for the project introduction to the clientCreate a list of key requirements and deliverables.Schedule next meeting with client
2. Q&A	<ul style="list-style-type: none">Our team: how many visitors a day on the website (Sally said 10-20 visitors)Our team: ask more about module details	<ul style="list-style-type: none">Collect more questions from team members regarding the project

[Video recording link](#)

14/03/2024 Client Meeting

Date : 14/03/2024

Time: 2:00PM- 2:50PM

Participants: Sally O'Hagan (Client) , Haofeng Chen, Yujin Du, Gaoyuan Ou, Mingxin Li, Weiyang Wu, Qinglin Zhao

Meeting Topic: Discuss and clarify requirements, Walk through motivational models, personas, user stories and low prototypes.

Time	Item	Presenter	Notes
2:05-2:06	Introduction	Weiyang Wu	<ul style="list-style-type: none"> Introduction to the meeting agenda. Request for recording.
2:06 - 2:10	Motivational models and persona	Haofeng Chen	<ul style="list-style-type: none"> Walks through the motivational models and persona
2:10 - 2:16	Persona	Yujin Du	<ul style="list-style-type: none"> Walks through to the persona Clarification on scalability: increase in functionalities and capacities of the functions as the number of users goes up e.g. the product is still responsive if the number of users increases from 10 to 100.
2:16 - 2:22	Epic 1 Clarification	Weiyang Wu	<ul style="list-style-type: none"> Walks through Epic 1 user management Clarify on admin's "all access"
2:22 - 2:25	Epic 2 Clarification	Gaoyuan Ou	<ul style="list-style-type: none"> Walks through Epic 2 Researcher requirement
2:25 - 2:26	Epic 2 Clarification	Mingxin Li	<ul style="list-style-type: none"> Walks through Epic 2 Rater requirement
2:26 - 2:31	Clarifications	Sally	<ul style="list-style-type: none"> Clarification on re-ordering chunk of texts: more like re-ordering some pieces of cards that contain texts. Clarification on rater requirements: must have some ways for the raters to interact with the activity. (re-ordering, highlighting, downloading...) Clarification on "all access": There will be more clarification to what it means that "admin has all access", how could admins differentiate from researchers? Does an admin also have researchers' functionalities?
2:31 - 2:35	Epic 3 Clarification	Qinglin Zhao	<ul style="list-style-type: none"> Walks through Epic 3 forum
2:35 - 2:44	Clarifications	Sally	<ul style="list-style-type: none"> Clarification of anonymity : raters have to request for anonymity from admin and

			<p>researcher. No raters can switch to anonymous by themselves.</p> <ul style="list-style-type: none"> • Clarification on forum: forum for both standardization and familiarization. • Clarification on standardization and familiarization (starting from 31:20): give raters some sample tests first, raters complete the tests, discuss on the forum. When in standardization, raters won't have that kind of conversation but will provide reasons for their ratings. • Disdiscussion on client feedback • Discussion on priority to see if there is discrepancy
2:44 - 2:49	Low prototype	Weiyang Wu	<ul style="list-style-type: none"> • Weiyang introduces a low prototype. • Suggestion on prototype: maybe to have a forum under each activity instead of under each module. • Clarification on data: sample data to be given to understand what an activity would look like.
2:49-2:51	Question and Answer	All members	<ul style="list-style-type: none"> • Clarification on data security: mainly concern about raters having unauthorized access to other confidential documents. Raters may be asked to read and sign a letter of agreement in regards to confidentiality before doing tests.

Action items:

- Shift of priority of the user stories: focus more on the epic 2 features. (Especially downloading-data feature, important, must-have)
- Edit rater anonymous functionality: raters have to request for anonymity.

Links:

- Due to the limited access of the AI tool, around 5 minutes of audio was cut off. No video provided by the AI tool as well.
- Further meetings will not have this issue again and will be recorded locally via zoom recording.
- [Audio link via Google drive \(access via unimelb email address\)](#)
- [Audio link via Otter](#)

11/04/2024 Client Meeting

Date : 14/03/2024

Time: 2:30PM- 3:10PM

Participants: Sally O'Hagan (Client) , Haofeng Chen, Yujin Du, Gaoyuan Ou, Mingxin Li, Weiyang Wu, Qinglin Zhao

Meeting Topic: Discuss and clarify requirements, Walk through motivational models, personas, user stories and hi-fi prototypes.

Time	Item	Presenter	Notes
2:31-2:35	Introduction about the current working progress	Weiyang Wu	<ul style="list-style-type: none">• Introduction to the meeting agenda. Request for recording.• Introduction to the UI/UX design of the webpages.• work through the future plan about the development.
2:36 - 2:40	Questions on how to handle the registration from the guest users	Yujin Du	<ul style="list-style-type: none">• Ask questions regarding to whether everyone has freedom on registration or not.• Come up with a way to handle the guest login.
2:41 - 2:45	Question on the videos, audio and image storage	Yujin Du	<ul style="list-style-type: none">• Ask questions regarding to the importance of demonstrating the videos, audios and images
2:46 - 2:50	Question on security matters	Yujin Du	<ul style="list-style-type: none">• Ask questions regarding to the security level required
2:51 - 2:55	User Stories confirmation	Weiyang Wu	<ul style="list-style-type: none">• User Stories refine
2:56 - 3:10	Backend Coding Demonstration	Weiyang Wu	<ul style="list-style-type: none">• Backend code demonstration and commit to GitHub

Action items:

- Improve UI/UX design elements and future development plans.
- Focusing on determining required security levels and implementing robust protocols.
- Refine user stories to ensure alignment with project objectives.
- Continue working on frontend and backend development.

Recording Links:

- [Video link](#)
- [Audio link](#)

16/05/2024 Client Meeting

Date : 16/05/2024

Time: 2:00PM- 2:30PM

Participants: Sally O'Hagan (Client) , Haofeng Chen, Yujin Du, Gaoyuan Ou, Mingxin Li, Weiyang Wu, Qinglin Zhao

Meeting Topic: Showcase Project

Time	Item	Presenter	Notes
2:00 - 2:15	Showcase	Gaoyuan Ou	<ul style="list-style-type: none">• Overall demonstration of the system:<ul style="list-style-type: none">◦ Admin: User Management◦ Researcher:<ul style="list-style-type: none">▪ 1. Create projects and allocate raters.▪ 2. Edit project details and user allocation.▪ 3. Create modules and activities (Embedding images, videos, documents).◦ Rater:<ul style="list-style-type: none">▪ 1. Able to view the content of the modules or activities▪ 2. Able to rate an activity
2:15 - 2:20	Questions on demo	Yujin Du, Weiyang Wu	<ul style="list-style-type: none">• Answer questions from Sally:<ul style="list-style-type: none">◦ Whether a user can be allocated to multiple projects◦ Different accounts for different roles◦ How automatic log out works
2:20 - 2:25	Explain some challenges during development	Yujin Du	<ul style="list-style-type: none">• PDF and other types of documents rendering on webpage• How the videos (large-size files) could be stored on the server
2:25 - 2:30	Discussion on the removal of some requirements	Weiyang Wu	<ul style="list-style-type: none">• Went through the requirements that were possibly need to be on hold due to technical difficulties and time constraints• Sally pointed out some requirements were fundamental:<ul style="list-style-type: none">◦ Time-based module◦ Download data for analysis

Action items:

- Continue working on Forum section.
- Complete the fundamental requirements that the client mentioned.
 - Time-based module
 - Download data for analysis

Recording Links:

- [Video link](#)
- [Audio link](#)

Mentor Meetings

06/03/2024 Mentor Meeting

Date: 06/03/2024

Time: 2:00PM-2:32PM

Location: Zoom

Participants: Mentor, our group, the other group

Meeting Topic: Mentor meeting and introduction

Topic	Content
Meeting requirements	<ul style="list-style-type: none">• Write a Minute of Meeting for each mentor, client, stand-up meeting. (Can be done in a rolling-basis)• Attend client meetings to understand their requirements, refine the requirements in the meeting• Mentor only attends the client meeting on this Thursday, then will not attend anymore client meetings
Emailing	<ul style="list-style-type: none">• Assign one person specifically to communicate with the client and the mentor via email. When sending emails to the client, CC to the mentor Email template: https://cis-projects.github.io/project_based_course_notes/extras/templates_for_comm.html• Do not send emails after working hours• After client meetings, we can send a minute of meeting to the mentor(optional?)
Tasks	<ul style="list-style-type: none">• Decide on task tracking tool, and invite the mentor as well• Complete mentor weekly meeting link:https://www.when2meet.com/?24011586-qEjkc
Introduction/Ice breaker	N/A
Others	<ul style="list-style-type: none">• Make documents clean, presentable, understandable, because mentors from other groups will know our progress and mark our project through these documents

Action items:

- Write a Minute of Meeting for each mentor, client, and stand-up meeting to document discussions and decisions effectively.
- Assign a specific person to handle communication with the client and mentor via email, following the provided template and CC'ing the mentor on client communications.

- Decide on a task tracking tool and invite the mentor for visibility and collaboration on project tasks.

12/03/2024 Mentor Meeting

Date: 12/03/2024

Time: 1:30pm-2:00pm

Location: Zoom

Participants: Haofeng Chen, Lin Li, Weiyang Wu, Gaoyuan Ou, MingxinLi, Yujing Du, Qinglin Zhao

Meeting Topic: Weekly meeting with mentor

Topic	Content
1. Stand up	<ul style="list-style-type: none">Haofeng Chen and Yujin Du had a discussion and completed the project overview, background, and goals.Weiyang Wu arranged the meeting with the client for this Thursday 2.pm and continued working on the user stories for Epic 1.Qinglin Zhao completed the user stories for Epic 3.Mingxin Li and Gaoyuan Ou had a discussion and continued working on the user stories for Epic 2.
2. Mentor suggestion on Project	<ul style="list-style-type: none">Discuss Confluence structure: Each sprint can be divided into Planning, Review, Retrospective. Development Environment, Quality, Meetings.Meeting minutes should be uploaded on Confluence.Proper project structure should be created on Github.Keeping using and updating the Trello board.Can make an acceptance document to get consent from the client about the requirement on Trello.

Action items:

- Establish a structured Confluence layout, including sections for each sprint (Planning, Review, Retrospective), Development Environment, Quality, and Meetings.
- Upload meeting minutes to Confluence for documentation and reference by team members and stakeholders.
- Ensure proper project structure is maintained on Github, organizing repositories and files for easy navigation and collaboration.

19/03/2024 Mentor Meeting

Date: 19/03/2024

Time: 1:30pm-2:00pm

Location: Zoom

Participants: Haofeng Chen, Lin Li, Weiyang Wu, Gaoyuan Ou, MingxinLi, Yujing Du, Qinglin Zhao

Meeting Topic: Weekly meeting with mentor

Topic	Content
1. Stand up	<ul style="list-style-type: none">The team introduces its progress
2. Mentor suggestions on project	<ul style="list-style-type: none">Can use vertical templates on the PersonasPersonas and background can have vertical layout by making them separate pagesConfluence structure: not following the sprint 1,2,3... But instead follow the SDLC structure.To-Be-Feel: can improve structure, share an exampleTask size use user story point, explain what the story point representPlanning: need a timelineGithub: Project overview, project goal, team introduction, change log, workflow, e.g. many branches, how to merge, what does the merge mean? Branching and merge, pull, review strategies, remember to updateTrello: write a column to explain the trello tasks. Suggestion: only ToDo, Doing, Done, extra info in the card. Can add story points into descriptions.Introduce the technical skills, Suggestion: can write a summary in the plan, and then write details in a separate section. Analyze the technologies used. Discuss pros and cons

Action items:

- Implement vertical templates for Personas to enhance readability and organization.
- Restructure Confluence to follow the Software Development Life Cycle (SDLC) structure instead of sprint numbers.
- Develop a timeline for project planning to ensure timely execution and delivery.

26/03/2024 Mentor Meeting

Date: 26/03/2024

Time: 1:30pm-2:00pm

Location: Zoom

Participants: Haofeng Chen, Lin Li, Weiyang Wu, Gaoyuan Ou, MingxinLi, Yujin Du, Qilin Zhao

Meeting Topic: Weekly meeting with mentor

Topic	Content
1. Stand up	<ul style="list-style-type: none">Showing our current project progress with mentor
2. Mentor suggestion	<ul style="list-style-type: none">Start Sprint 2 coding partPrepare for the incoming client meeting and showcase the current project progressKeep track of Trello update

Action items:

- Discuss the sprint 2 coding assignment with team members.
- Determine the part of the project to show to the client.
- Updating the Trello content and make sure each team member on track.

09/04/2024 Mentor Meeting

Date: 09/04/2024

Time: 1:30PM-2:00PM

Location: Zoom

Participants: Mentor, Weiyang Wu, Gaoyuan Ou, Haofeng Chen, Mingxin Li, Yujing Du, Qinglin Zhao

Meeting Topic: Mentor meeting and introduction

Topic	Content
1. Stand-up Meeting	<ul style="list-style-type: none">Discuss our current project progress in the break week.
2. Mentor suggestion	<ul style="list-style-type: none">Provide some advice for the sprint 2.Suggest we demonstrate front-end UI to the client so that she could have a general idea about the whole project.Suggest we demonstrate back-end UI into simple words to the client in case she may be confused about the complex concepts.

Action items:

- Bases on the mentor suggestion, rich the frontend UI, add more data showing.
- Continue working on the project development.

16/04/2024 Mentor Meeting

Minutes of Meeting

Date: 16/04/2024

Time: 1:30PM-1:45PM

Location: Zoom

Participants: Mentor, Haofeng Chen, Gaoyuan Ou, Mingxing Li, Weiyang Wu, Yujin Du

Meeting Topic: Mentor meeting

Topic	Content
1. Progress report	<ul style="list-style-type: none">Backend and frontend teams to report progress to each other
2. Mentor suggestion	<ul style="list-style-type: none">Backend can provide API format so that frontend does not need to wait for the backend. Teams can discuss standards of the data from APIProgress should be fasterProject to be more completeMake extension suggestions to the client in regards to data storage

Action items:

- Establish a standardized API format to facilitate seamless communication between backend and frontend teams, allowing for independent progress.
- Increase the pace of progress to ensure timely completion of project milestones and deliverables.
- Collaboratively brainstorm and propose extension suggestions to the client concerning data storage enhancements.

23/04/2024 Mentor meeting

Date: 23/04/2024

Time: 13 : 30 - 14 : 00

Location: Zoom

Participants: Haofeng, Weiyang, Yujin, Qinglin, Gaoyuan, Mingxin

Meeting Topic:

Topic	Decision Making
1. Code review	Post issue on ed with explanation. If the problem still cannot be resolved, use chatgpt directly.
2. Deployment	Free deployment platform is sufficient. If recording video, user stories should be mentioned.
3. Development progress	Still need to accelerate.
4. Ethic	Follow the content of the lecture.
5. Confluence	Structure improvement

Action items:

- Confluence improve: Add more meaningful folders such as plans, meetings. The order should follow software development life cycle.
- Create a checklist to ensure user stories are mentioned in any recorded deployment videos.
- Check the lecture for ethic.

30/04/2024 Mentor meeting

Date: 30/04/2024

Time: 1:30pm-1:43pm

Location: Zoom

Participants: Haofeng Chen, Lin Li, Weiyang Wu, Gaoyuan Ou, MingxinLi, Yujing Du, Qinglin Zhao

Meeting Topic: Weekly meeting with mentor

Topic	Content
1. Stand up	<ul style="list-style-type: none">The team introduces its progress: the project is deployed and usage information is written in confluence, need to add to Github laterBackend discuss: Implemented models for activities, still need to address issues such as model referencing between activities and modelsFrontend displays: Activities are yet to be connected with the backend. There should be no problems to input/output videos in the UI, but still remains some questions once the backend address relevant issuesAI code review: currently in progress to deal with AI code review token as well as documentationContact client for the next meeting and the next sprint review
2. Mentor suggestions on project	<ul style="list-style-type: none">Should discuss priorities with client about which functionalities to discard, never wait for the last minute to address these issues

Action items:

- Schedule a focused meeting to resolve the model referencing issues between activities and models.
- Identify and document any remaining questions or potential issues to address during the integration.
- Complete the AI code review and finalize the documentation for the AI code review process.
- Prepare an agenda for the client meeting, including a discussion on priorities and functionalities to discard.

07/05/2025 Mentor Meeting

Date: 07/05/2024

Time: 1:30pm-1:40pm

Location: Zoom

Participants: Lin Li, Gaoyuan Ou, MingxinLi, Qinglin Zhao

Meeting Topic: Weekly meeting with mentor

Topic	Content
1. Stand up	<ul style="list-style-type: none">Backend progress: APIs for Forum are mostly finished. Await to be connected with frontend.Frontend progress: Activities can be displayed but minor issues should be fixed. (Other file type upload)
2. Discussion on the final presentation	<ul style="list-style-type: none">Clarify the mode of the final presentation - via zoomTime: TBD (probably same as weekly meeting)
3. Client meeting	<ul style="list-style-type: none">Discussion on when the meeting with the client should be organised

Action items:

- Assign team members to fix these issues and set a deadline for completion.
- Propose the final presentation time to the team and confirm it aligns with everyone's availability.
- Contact the client to finalize a date and time for the meeting.

14/05/2025 Mentor Meeting

Date: 14/05/2024

Time: 1:30pm-1:38pm

Location: Zoom

Participants: Haofeng Chen, Lin Li, Weiyang Wu, Gaoyuan Ou, MingxinLi, Yujing Du

Meeting Topic: Weekly meeting with mentor

Topic	Content
1. Mentor suggestions on project	<ul style="list-style-type: none">• Discuss delivery method and deployment with the client in regards to sprint 4 submission• Presentation won't be long and the team confirmed to receive an email about the final presentation link

Action items:

- Arrange a meeting with the client to discuss and confirm the delivery method and deployment details for the sprint 4 submission.
- Confirm the presentation length and format with the team.
- Prepare the final presentation with teams.

Team Meetings

13/03/2024 Team Meeting

Date: 13/03/2024

Participants: Weiyang Wu, Haofeng Chen, Gaoyuan Ou, Mingxin Li, Qing Lin, Yujin Du

Meeting Topic: Discuss the user stories that we have made so far; Discuss the target user personas

Time	Presenter	Notes
19:00	Weiyang and other 3 teammates	<ul style="list-style-type: none">• Review the current user stories to ensure they are complete and accurately reflect the user's needs.• Update the user stories in Confluence and ensure they are accessible to all team members.
19:30	Haofeng Chen and Yujin Du	<ul style="list-style-type: none">• Review and finalize the target user personas.• Ensure the personas are detailed and accurately represent the different user segments.• Document the finalized user personas in Confluence and share them with the team.

Action items:

- Figure out the current problems and discuss them together.
- Demonstrate the current work to the clients.

Decisions:

- Confirm the decisions we made with stakeholders tomorrow.
- Refine the user stories.
- Introduce the personas to clients at the next meeting with clients.

11/03/2024 Team Meeting

Date: 11/03/2024

Time: 14:00 - 15:00

Location: Old Engineering Building Meeting Room G79

Participants: Gaoyuan Ou, Mingxin Li, Qinglin Zhao, Weiyang Wu, Yujin Du

Meeting Topic: Requirement analysis and user stories

Topic	Content
1. Questions from the requirements	1. Discussed some questions or confusions raised from the requirement document from the client. 2. Some still remained unresolved and should be mentioned in the next client meeting.
2. Allocate epics for user stories	1. Discussed on how to convert requirements into epics. 2. Assign people into epics for user stories.
3. Decided time for next meeting	1. Finalised the time for the next meeting, which is 7pm 13/03/2024.

Action items:

- Working on the documentation on Confluent.
- Trello creating and updating.

09/03/2024 Team Meeting

Time: 2p.m.

Location: Online

Participants: Haofeng Chen, Weiyang Wu, Mingxin Li, Guoyuan Ou, Qinglin Zhao

Meeting Topic: Sprint 1 plan

Topic	Decision Making	Actions
People for Analysis of requirements	Qinglin Zhao Weiyang Wu Gaoyuan Ou Mingxin Li	Prepare user story <ul style="list-style-type: none">assign user stories tasks to each memberDetermine another meeting or chat on the final checking
People for Background description	HaoFeng Chen YuJin Du	Prepare project overview, background and goals
People for Confluence	WeiYang Wu	Organize Confluence <ul style="list-style-type: none">create a detailed structuremake the section content consistent
Meeting for analysis of requirement	Hold on 11/3/2024 2p.m. 3 in person with Zoom	Hopefully finish requirement analysis and start to plan next sprints

Action items:

- Start doing the project analysis and write the documentation.
- Conduct team meetings to talk about the tasks.
- Plan for the delivery to the client on the next client meeting.

21/04/2024 Team Meeting

Date: 21/04/2024

Time: 21:00 - 22:00

Location: Zoom

Participants: Gaoyuan Ou, Mingxin Li, Qinglin Zhao, Weiyang Wu, Yujin Du, Haofeng Chen

Meeting Topic: Sprint 2 Progress

Topic	Content
Stand up	<ul style="list-style-type: none">• Front-end Progress Showcase:<ul style="list-style-type: none">◦ Gaoyuan Ou, Mingxin Li, Haofeng Chen present the progress on the front-end.◦ Mention that the front-end development is almost complete except for a part of the activity.• Back-end Progress Showcase:<ul style="list-style-type: none">◦ Qinglin Zhao, Weiyang Wu, Yujin Du present the progress on the back-end.◦ Note that the back-end development is almost complete except for a part of the activity.
Questions and discussion	<ul style="list-style-type: none">• Address any questions or concerns raised during the progress showcase.• Discuss issues encountered during the showcase and add them to the fixing list.• Hold a discussion on how data is related in the back-end, focusing on the relationship between users and projects.• Discuss the issue with uploading files to MongoDB and brainstorm possible solutions.

Action items:

- Start working on the document in Confluence
- Keep doing the remaining part of development.

30/04/2024 Team Meeting

Date: 30/04/2024

Time: 21:00 - 21:20

Location: Zoom

Participants: Gaoyuan Ou, Mingxin Li, Qinglin Zhao, Weiyang Wu, Yujin Du, Haofeng Chen

Meeting Topic: Sprint 3 Progress

Topic	Content
Stand up	<ul style="list-style-type: none">• Front-end Progress Update:<ul style="list-style-type: none">◦ Gaoyuan Ou, Haofeng Chen, and Mingxin LI presented the progress on the front end.◦ Proposed solution for displaying videos and other document files on the front end.• Back-end Progress Update:<ul style="list-style-type: none">◦ Qinglin Zhao, Weiyang Wu, and Yujin Du present the progress on the back end.◦ Provided insights into the challenges faced and how they addressed issues related to server performance.
Questions and discussion	<ul style="list-style-type: none">• Discussed various options for integrating media playback features and ensuring compatibility with different file formats.• How the modules and activities should be related.

Action items:

- Finalise connection between front end and back end
- Hold a follow-up meeting to review the integration progress and troubleshoot any issues that arise during the process. (Time TBD)
- Document the integration process and create a set of guidelines to streamline future development efforts.

11/05/2024 Team Meeting

Date: 15/05/2024

Time: 18:00 - 19:00

Location: Zoom

Participants: Gaoyuan Ou, Mingxin Li, Qinglin Zhao, Weiyang Wu, Yujin Du, Haofeng Chen

Meeting Topic: Final Presentation Powerpoint & Demo to client

Topic	Content
1. Slide Content Discussion	<p>The slide structure:</p> <ul style="list-style-type: none">• Project Background, Project goals, Project Management, Project Architecture, Project Demonstration, Future Work.• Each member take one slide to complete and prepare their presentation.• Determine the time of each slide will take to ensure the whole presentation time limit.
2. The remaining of Project Discussion & Client meeting demo	<ul style="list-style-type: none">• Talk about the project issues with backend and frontend.• Ensure the UI displays activities correctly and consistently.• Collaborate with the backend team to ensure smooth data flow and synchronization.• Demo each part as different users to the client.

Action items:

- Start working on the slide and prepare the presentation.
- Prepare the demo for the client.

19/05/2024 Team Meeting

Date: 19/05/2024

Time: 21:00 - 22:00

Location: Zoom

Participants: Gaoyuan Ou, Mingxin Li, Qinglin Zhao, Weiyang Wu, Yujin Du, Haofeng Chen

Meeting Topic: Final Presentation rehearsals

Topic	Content
1. Project structure	<ul style="list-style-type: none">Review and finalize the content of the PowerPoint presentation.Ensure that the presentation covers all key aspects of the project, including introduction, methodology, results, and conclusions.Rearrange the slides to ensure a logical flow and coherent narrative.Ensure that each section of the presentation transitions smoothly to the next.Each team member should practice their part of the presentation and record the time taken.Share the recorded times with the team to ensure the overall presentation fits within the allocated time slot.
2. Team Presentation rehearsals	<ul style="list-style-type: none">The team rehearsed twice.The presentation time is a bit long, some member's part should be shorter.Use feedback from the rehearsals to make final adjustments to the presentation content and delivery.

Action items:

- Team member should have more practice.
- Conduct one more rehearsal before the formal presentation.

AI Code Review

[Sprint 2 Code Review](#)

Sprint 2 Code Review

AI Model: ChatGPT 3.5

People Participated: Qinglin Zhao

Date: 29/4/2024

Code Review Target: Back-end essential logic code and entity model.

Reviewing Method:

This code review work should have been completed through GitHub integration. However, problems occurred during use and were not resolved in time after feedback. Therefore, this code review was completed by manually entering the query content into ChatGPT (using consistent prompt words).

Selection Criteria for Reviewed Code:

It is not a wise choice to review all files. First, you must remove irrelevant content such as configuration files. Additionally, because a lot of the code is just structural parts of the entire application, there isn't much that needs to be tweaked. This type of code files are mainly routing files in the back-end code structure, so route files are not involved in this code review. The main files for this code review are controller files and model files. The controller file mainly handles the request processing logic in the application, while the model file mainly handles the business logic in the application.

Feedback Summary:

According to the prompt words, the feedback provided by AI includes: documentation defects, visual representation defects, structure defects, new functionality, resource defects, check defects, interface defects, and logic defects. I will summarize each item in the following.

1. **Documentation defects:** Naming is generally fine since every developer in the group followed good software convention. About commenting, AI told us to be more detailed and provide context for the logic.
2. **Visual Representation Defects:** Bracket Usage, indentation and long line problems are fairly few.
3. **Structure defects:** This part included detection of dead code and duplicated code. Dead code has not been discovered in our code. However, we do have some duplicated code.
4. **New functionality:** Our code followed the standard of express framework and mongoose model.
5. **Resource Defects:** All variables are properly initialized before use and memory usage seems fine.
6. **Check Defects:** Input check was included in the code, but it could be more robust depending on requirement.
7. **Interface Defects:** Parameters seem appropriately used when calling functions and libraries.
8. **Logic Defects:** The logic appears to be correct, but there might be some edge cases that need more thorough testing and the performance seems acceptable for typical use cases.

Recommended Changes from AI are generally consist of:

- Add comments to explain the purpose and functionality of specific sections of code, especially complex logic or business rules.
- Refactor duplicated code blocks into reusable functions or middleware to improve code maintainability and reduce redundancy.
- Enhance input validation to handle edge cases and ensure data integrity.
- Consider optimizing database queries to improve performance, especially in operations that involve fetching or updating multiple documents.

Respond to AI feedback:

After receiving feedback from AI on our code, we considered the feedback and came to the following conclusions based on the actual situation.

AI has a strong ability to detect code structure and format, and it is also easy to find duplicate codes in the code. When evaluating the UserController.js, the AI discovered that a portion of the logic in our code was used multiple times. Therefore, a refactoring suggestion to

wrap it into a function was proposed.

- b. Duplication: There's some duplication in the logic for handling `req.body.researchers`. This could be refactored into a separate function to avoid repetition.

Duplication found by ChatGPT

However, except the ability of check basic code problem, the suggestions provided by AI only improve the content mentioned in the prompt words, and do not give us more specific details and suggestions. We think the reasons are as follows. The first and most important point is that AI can only process one file at the same time when conducting code evaluation, and cannot associate files to view them together. Our code is structured into Route, Controller and Model. These three components are in a calling relationship, so just looking at the code of one part of them alone cannot get a lot of useful information. This is why the AI will often say that the code seems reliable because it doesn't know what the other parts are like.

In addition, the space for AI to play under this prompt word is limited. AI will only answer one by one based on the entries in the prompt word. For these prompt words, AI can only use some general answers. This is reflected in the fact that no matter which code file I use, the feedback I get is actually similar.

Action Taken:

Based on the above analysis, we believe that the current AI code review obtained under the prompt words cannot provide us with a lot of useful information. However, some basic problems such as duplicate code can still be corrected, so we will also refactor the code in this part. However, the answers given by other AIs are still too general, so there are not many modifications at this stage.

Sprint 3 Code Review

AI Model: ChatGPT 4.0

People Participated: Qinglin Zhao

Date: 20/5/2024

Code Review Target: Back-end new functionality in sprint 3.

Reviewing Method:

This code review work was completed through GitHub integration. In our project repository, when pull request happened, AI code review would be automatically triggered and generate comments to this pull request changes.

Selection Criteria for Reviewed Code:

Since we only did incremented update in code this time, the files need to be reviewed is not too many. So we directly used all ".js" files that has been updated to do this review. These files contain routing, controller, and model file. In this scenario, a complete backend structure was reviewed.

Feedback Summary:

According to the prompt words, the feedback provided by AI includes: documentation defects, visual representation defects, structure defects, new functionality, resource defects, check defects, interface defects, and logic defects. I will summarize each item in the following.

1. **Documentation defects:** Naming is generally fine since every developer in the group followed good software convention. About commenting, AI told us to be more detailed and provide context for the some complex logic in controller, and schemas define in models.
2. **Visual Representation Defects:** Bracket Usage, indentation and long line problems are fairly few.
3. **Structure defects:** This part included detection of dead code and duplicated code. Dead code has not been discovered in our code. However, AI found our controller file have logic that has not been integrated to factory object as other logics did.
4. **New functionality:** Most of our code followed the standard of express framework and mongoose model. But we need to ensure that all custom functions align with this pattern could enhance standardization.
5. **Resource Defects:** All variables are properly initialized before use and memory usage seems fine. However, ensuring that operations like saving data handle potential exceptions could further improve stability.
6. **Check Defects:** Input check was included in the code, but the code assumes `req.params.id` and `req.body` are valid and does not explicitly validate them. Adding input validation could prevent potential issues and enhance security.
7. **Interface Defects:** The parameters used in function calls appear correct. However, the code assumes that the model names and structure do not change, which might not be robust in a dynamic environment.
8. **Logic Defects:** The logic appears to be correct, but it could be more efficient or clear. A mapping object or switch statement might be more readable. The performance seems standard for CRUD operations. However, some repeated pattern of checking model names and fetching from the database could be optimized or cached if performance issues arise.

Recommended Changes from AI are generally consist of:

- **Add Comments:** Include detailed comments to improve code clarity, especially describing the purpose and functionality of each route.
- **Input Validation:** Ensure that all user inputs are validated and sanitized in the controller functions to prevent security vulnerabilities.
- **Performance Monitoring:** Monitor and optimize the performance of database queries and other computational tasks in the controller functions.
- **Error Handling:** Implement comprehensive error handling in the controller functions to manage and respond to errors effectively.

Respond to AI feedback:

After this code review, we have the following response to the suggestions made by AI.

The indicators for AI code analysis this time are still the same as last time, including a series of considerations on code files from writing format to logical operation. But the suggestions put forward this time are quite different from the last time.

First, AI has become better at detecting potential problems in code. Previously, it was only able to identify some written problems such as variable name errors. But this time AI made relative suggestions for some performance issues that we had not thought of. For example, for the `populate()` method, if the size of the document is too large, forcibly expanding its sub-items may cause performance problems.

- . **Performance Monitoring:** Keep an eye on the performance impact of the `populate()` method in scenarios where forums have many threads. Consider implementing pagination or limiting the fields returned if necessary.

Potential performance problem spotted by AI.

Not only that, compared to last time, AI provided a more detailed description and explanation of the problems found. In the past, AI would only tell you broadly that there might be some kind of problem with your code, but this time AI will tell you exactly which variable or which function has the problem. For example, before the following prompt, AI would only say that the code needs to be improved in terms of validation. But this time AI directly told me which variables had validation deficiencies, which really helped us a lot in reviewing the code.

a. Check User Input:

- o The code assumes `req.params.id` and `req.body` are valid and does not explicitly validate them. Adding input validation could prevent potential issues and enhance security.

AI suggestion with exact variable.

In general, AI code review already has sufficient analysis capabilities. What may still need to be improved is the understanding of project scenarios. Most of the suggestions made by AI are based on industrial-level development, and our project obviously did not reach this situation. So maybe AI's demands on us are too high. But this is not entirely a bad thing, because it is always good to strive towards higher requirements, but it would be better if it was more specific to the project scenario.

Action Taken:

Based on the above analysis, we adopted the conclusion given by AI this time. Compared with the last time the suggestions made by AI were too general, the suggestions put forward this time are more feasible. Therefore, we carefully corrected the format modifications, variable name modifications, and logical problems proposed by AI. However, as mentioned before, some requirements are slightly too high for our current project, and such modification suggestions will not be modified for the time being. After the modification, the quality of our code has indeed improved, so this AI code review is meaningful.